Musical development of young children of the Chinese diaspora in London

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Declaration

I, Yen-Ting Wu, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signature:

Date:

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Abstract

The thesis investigates the musical behaviour and development of young, pre-school children of the Chinese diaspora in London. There has been rapid growth in the Chinese population in the UK over the last three decades, yet little is known about of the nature and significance of the diaspora in young children's musical development.

Two theoretical frameworks were used to frame the nature of the research. Firstly, pre-school musical behaviour in the home was investigated through the Sounds of Intent in the Early Years framework (Ockelford, 2015; Voyajolu & Ockelford, 2016). Secondly, different aspects of the young child's socio-musical environment were examined using Ecological Systems Theory (Bronfenbrenner, 1979; 2005).

Data collection involved two interrelated phases. In the exploratory stage, twenty Chinese mothers were interviewed individually to investigate their musical biographies and values, and their children's musical engagement in the family. In the main fieldwork phase, ten of these mothers kept a regular diary of their children's musical behaviours over six months, supplemented by optional video recordings and photographs. Two further interviews were also undertaken. Subsequently, four individual children from three families were selected for case study analyses, and these were compared with the dataset of the other participants to gain a comprehensive picture.

Findings suggest that these young children's musical development was both age-related and context-dependent. Potential socio-cultural factors included the local environment, members of the family and their community settings, which were embedded in various cultural impacts. The Chinese identity held by these families informed daily music and language exposure for these young children. In addition, parents believed in the value of music learning as a way to nurture good character. Novel findings from this study highlighted the distinctive nature of these young children's musical experiences and development within the Chinese diaspora in London and raised awareness of the diverse nature of the musical environment of children before formal education. Musical behaviours were both characteristic of early childhood, but also distinctive in the ways that they were embedded in Chinese cultural artefacts.

Impact Statement

The impact of this study is to improve our current understanding of how young preschool children develop musically in a diasporic family context, and to raise awareness of the diverse socio-cultural musical environments of such young children. The research findings in this study add to the existing evidence base in music education research concerning the distinctive nature of children's musical experiences and musical development pathways before they enter formal education. The Chinese population has been growing rapidly in the UK, particularly in major urban centres such as London. The findings of this study, therefore, can inform policy makers of possible key family child rearing characteristics of the increasing young Chinese population, with potential implications for understanding other ethnic minorities, particularly in relation to their distinctive musical cultures and language exposure. These characteristics need to be taken into account when introducing educational policies. For early years practitioners and local music providers, an enriched understanding of the nature of the musical experiences and development of infant and preschool children should provide a better basis for effective pedagogy and provision. The participant families' emphasis on linking musical and language exposure is also important for the design of wider curriculum and speech, language and communication provision for young children and has positive implications for families whose children with Speech, Language and Communication needs who could benefit from an enriched sonic environment through music.

This study also demonstrated an example of investigating young children's musical development using the newly-developed Sounds of Intent in the Early Years framework in combination of Ecological Systems Theory. The provision of strengths and limitations present in the thesis provide a basis for the design of future research. For the families who are part of Chinese diaspora in London, the findings from this study provided an insightful understanding of the richness of young children's musical behaviours and development in the home and local community, as well as through extended family networks.

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Chapter 1 Introduction to the study

1.1 Introduction

It is widely recognised that, whilst musical potential is a characteristic of all human beings, its realisation is shaped by the environment and the experiences of individuals (North & Hargreaves, 2008; Welch & McPherson, 2012). Before their formal education starts, children already demonstrate musical abilities that derive from their experiences of the maternal musical culture. The family is usually the most important factor in children's induction into the musical worlds of their culture (Williams, Barrett, Welch, Abad, & Broughton, 2015).

With globalisation and the high mobility of populations around the world, there has been a growing interest in the musical experiences and development of children who come from an immigrant background and represent ethnic minority groups in a society. It has been suggested by music education scholars that more research into wider and diverse social and cultural contexts is needed in order to deepen our understanding of children's musical learning and the development of musicality (Hallam, 2011; Young, 2013).

Relevant research in music education has focused on the musical experiences and development of children as a result of their ethnic identities and/or immigrant background (Campbell, 2011; Gratier, 1999; Lum, 2008; Young, 2009). Young children's musical experiences in culturally diverse situations, however, have received relatively less attention (Young, 2013), and it has been argued that music education practitioners in England have a lack of knowledge concerning the musical lives of children from ethnic minority backgrounds (Young, 2007). This study seeks to enrich the research field of musical development and music education of young children from an immigrant and culturally-diverse background with a focus on Chinese families living in and around London.

1.2 Chinese diaspora in the UK

1.2.1 The definition of 'Chinese diaspora'

The word 'diaspora' historically referred to the exile of the Jewish people from their homeland and their dispersion to foreign destinations (Cohen, 2008; Safran, 1991; Skeldon, 2003). In recent years, the concept of diaspora has been expanded to include the migration of people in diverse contexts. For instance, Safran (1991) described the contemporary application of diaspora in the literature to refer to 'the metaphoric designations for several categories of people – expatriates, expellees, political refugees, alien residents, immigrants, and ethnic and racial minorities *tout court*' (p.83). Skeldon (2003) suggested that the concept

of diaspora, which represented community-in-exile people, implied an assumption that 'peoples are not assimilated into the societies of destination: they retain their distinct identities ready for the day when they can return home' (p.52). Nevertheless, Tan (2012) noted that the term 'Chinese diaspora' has been popularly used, especially in Euro-American countries, to refer to the ethnic Chinese who live outside mainland China, Hong Kong, Macau and Taiwan. Tan (2012) also highlighted that diaspora scholars paid more attention to diaspora discourses that 'represent experiences of displacement, of constructing homes away from home' (Clifford, 1997, p. 244). Based on the various meanings of diaspora given above, in the current study 'Chinese diaspora' refers to the Chinese emigrating from their home countries to a foreign destination, with commonalities that are likely to be distinctive from those of the host societies.

1.2.2 The Chinese diaspora in a global context

Research into the Chinese diaspora has recognised its trading and labour history that led to its dispersion (Cohen, 2008). However, Ma (2003) divided the history of Chinese migration into two periods to mark dramatic differences: prior to the 1960s, the Chinese migrants, primarily from the villages of Guangdong and Fujian provinces, were mainly labours, traders and farmers; since the 1960s, many ethnic Chinese have emigrated from Hong Kong, Taiwan, Mainland China and Southeast Asia for political reasons. Furthermore, Ma (2003) noted that more recent Chinese migrants were likely to be well-educated and work as professionals, featuring diverse economic backgrounds among the Chinese diaspora. Skeldon (2003) indicated that, although Chinese are of one ethnic group and come from a common Confucian heritage with an identical written script, there are significant differences among them, such as in spoken languages and folk cultures. Also Knowles (2017) noted that the term 'Chinese' 'covers a multitude of ethnic, linguistic and cultural differences even within Mainland China' (p.457-458). In general, the Chinese diaspora, in the global context, customarily features common values that are distinctive to the host societies, as well as representing a heterogeneous group in terms of people's national and cultural backgrounds and the contexts of migration.

1.2.3 The Chinese diaspora in the UK

It has been argued that the Chinese are regarded to be one of the UK's neglected minorities (Knowles, 2017). The Chinese community in Britain is long established and has been a steady presence since the nineteenth century. The colonial relationship between Britain and Hong Kong from 1842 to 1997 brought Britain a considerable number of the indigenous Chinese population who came and settled to seek career opportunities (Chan & Chan, 1997). Another wave of migration occurred from the 1980s onwards as people from mainland China

came to Britain to study (Bosveld & Connolly, 2006). Nowadays, Chinese people in Britain are mainly from Hong Kong, China, Malaysia, Vietnam, Singapore and Taiwan (Bosveld & Connolly, 2006). As Lee (2001) indicated, the Chinese community in Britain is a heterogeneous group in terms of their origins and backgrounds.

There has been an increase in the overall Chinese population in Britain in the last two decades. The official statistics reported that the Chinese population in Britain increased from approximately 157,000 to 243,000 between 1991 and 2001 (Bosveld & Connolly, 2006) (Bosveld & Connolly, 2006), representing an increase of 55% on the original population in 1991. According to the latest Census published by the Office for National Statistics (ONS) in 2011, there were 426,847 people in Britain who identified themselves as ethnic Chinese[1] (ONS, 2014), featuring another 76% increase from the 2001 statistics. In terms of the geographic distribution, the 2011 census showed that the Chinese population is dispersed. London accounts for the highest number of Chinese among all of the regions in England, featuring 124,250, which represents 33% of the Chinese population in England and 1.52% of the overall London population (ONS, 2012). Other cities such as Manchester (13,539), Birmingham (12,712) and Surrey (9,461) also showed concentrations (ONS, 2011). Furthermore, Knowles (2017) has recently suggested that, according to the 2011 Census, the Chinese population showed higher percentages among the overall populations in the cities with Russell Group universities, such as Cambridge, Manchester, Newcastle, Nottingham, Oxford, Exeter, Liverpool, Sheffield and Southampton, which is believed to reflect the recent trend of young Chinese migrants who come to the UK to study. She also pointed out the higher percentages of Chinese population in London's wealthier areas, such as the boroughs of Camden, Westminster, Islington and Kensington and Chelsea, which is potentially related to the shift in UK border policy to favour temporary migrants and highly-skilled workers. These new Chinese migrants have become part of Chinese diaspora in the UK, in addition to those Chinese families who have settled for generations. In general, the government statistics demonstrated a significant growth of Chinese population in the UK in the last three decades, with a feature of dispersed distribution as well as scatterings in certain cities.

Research into the Chinese diaspora in the UK, with a focus on the family context, has noted the retention of Confucian values within British Chinese families (Sham & Woodrow, 1998), the cultural flexibility of contemporary British Chinese parenting (Clayton, 2011), and factors that contribute the academic success of British Chinese pupils (Francis & Archer, 2005). The emphasis on education in Chinese perspectives could also be seen in the interpretation by Kinney (1995), who found a Chinese view of childhood as 'a phase of

[1] The Chinese population is under the category of 'Asian/Asian British: Chinese'.

human development which is not valued for its own merits, but also, simultaneously, a deep reverence for the intellectual and moral potential of the child, which required development through education' (p. 12). Moreover, she also emphasised that Chinese attitudes toward children clearly varied from family to family, despite congruences in time, place, and social status (Kinney, 1995).

1.3 Background to the study

With an understanding of the growth of Chinese population in the UK and the recognition of the family's values on education and the academic performances of Chinese students, more research is a needed that focuses on different educational and developmental aspects of the Chinese, including their musical development. The early childhood music education scholars recognise that, before they enter compulsory education, young children develop musically in ways that are supported by their family, the musical cultures surrounding them and other environmental factors (e.g. Young, 2013).

Research into music education in contemporary Chinese families has included an investigation of the influence of parental goals and practices on children's musical development in Singapore (Lum, 2016). It is reported that there is a likelihood of instrumental learning being favoured among Chinese children, with approximately 36 million Chinese children studying the piano today (Huang, 2012). A similar phenomenon in China was observed two decades ago by Gardner (1989), who wrote, '…There is also a widely shared feeling that arts education will aid children in becoming good citizens and perhaps even in competing successfully for educational and professional rewards' (p.220). However, there is limited research concerning the musical environment and development of young Chinese children in a British context. There is a need to enrich the available research regarding musical development of young children of Chinese diaspora.

1.4 Research aims and research questions

The aim of this study is to improve the understanding of musical development of young children from the Chinese diaspora in London. With a focus on how young children develop musically within a family context, this study seeks to explore the interrelationships between children's musical development and various aspects in their musical environment. The research questions are as follows,

1. How do young children of the Chinese diaspora in London develop musically in their family context?
2. What socio-cultural factors might play a role in shaping daily musical experiences of young children of Chinese diaspora in London?
3. How does the young children's family context, as part of the Chinese diaspora in London, play a role in shaping their daily musical experiences?

1.5 Structure of the thesis

The thesis is structured into the following chapters:

Chapter 1 introduces the background of the study, the research questions that are generated by the current research gap, and the significance of the study.

Chapter 2 reviews the available literature on musical development of young children under 5 years old, which is followed by current literature with a focus on the family context that might play a role in shaping young children's daily musical experiences and development.

Chapter 3 introduces two theoretical frameworks applied in this study. Musical development is examined through the Sounds of Intent in the Early Years (SoI-EY) framework (Voyajolu & Ockelford, 2016), in which young children's musical behaviours and development were understood in three domains (Reactive, Proactive and Interactive), each with four levels (2 to 5) that address young children's developmental progression of musical understanding from sounds to whole musical pieces. The musical development of young children is contextualised through the lens of Ecological Systems Theory (Bronfenbrenner, 1979, 2005), in which the complexity and dynamics of young children's socio-cultural musical environment is explored in terms of Micro-, Meso-, Exo-, Macro-, and Chronosystems.

Chapter 4 explains the research methodology of this study. This includes the selection of methodological approaches and research methods and the philosophical orientation of this study. The conduct of this study is explicitly explained in this chapter.

Chapters 5, 6 and 7 present the findings from four case studies to illustrate the nature of young Chinese children's musical development in London and aspects of their immediate environments that may shape this development. Chapters 5 and 6 present the case studies

of Lucy and Rina (all case study names are provided as pseudonyms) respectively. Chapter 7 illustrates two case studies of Ellen and Betty who are sisters.

Chapter 8 discusses the main findings across the case studies and links these back to the available literature.

Chapter 9 concludes the thesis with an overarching summary of the main findings and their implications.

Chapter 2 Literature Review

2.1 Introduction

This chapter presents a review of current literature on two different, but interrelated foci. The first part of the chapter explores the literature on the musical development of young children from birth to 5. The understanding of young children's musical development is based on a socio-cultural perspective, in which the social and cultural contexts in which the young children lived/grew up were recognised to be influential to their musical development. The second part of this chapter explores young children's various musical experiences within a family context. These two foci in the literature review seek an insight into aspects of young children's musical development and the role of family that reveal a gap that will be fulfilled by the present study.

2.2 Musical development of infants

2.2.1 Musical development in the prenatal period

Research suggests that the human auditory system starts functioning in the final trimester of the prenatal period. A foetus is developing in an environment that is rich with internal and external sounds (Gerhardt, Abrams, & Oliver, 1990). The sounds potentially heard by the foetus range from the mother's heartbeat and ripples made by their own movement in the interior environment, to voices, sounds and music from the exterior environment (Tafuri, 2008). Foetuses respond to sounds by heart-rate accelerations or decelerations and movement (Lecanuet, 1996; Parncutt, 2015). A foetus at about 24 weeks gestational age (GA) begins moving at the sounds (Lecanuet, 1996). New-born infants seem to recognise the sound or tune that they have experienced in the foetal environment. For example, the new-borns were observed to distinguish their mothers' voices from the voices of other females (DeCasper & Fifer, 1987). The new-borns show different lengths of musical memory, ranging from 21 days (Hepper, 1991) to 6 weeks (Wilkin, 1995). For example, new-borns were observed to react distinctly to a TV theme tune which was exposed to them before birth with heightened alertness, lower heart rate, and fewer movements (Hepper, 1991). Another study showed that, after exposure to musical pieces from 32 weeks GA, the 6-week-old infants were observed to recognise the musical pieces by showing a greater willingness to listen to them and more physical movement (Wilkin, 1995). A more recent study revealed that the regular exposure to the same melodies in the prenatal period can have long-term plastic effects on the developing brain and enhance neural responsiveness to the sounds

used in prenatal training (Partanen, Kujala, Tervaniemi, & Huotilainen, 2013). Overall, literature suggests that new-born infants have had extensive experiences of sound and music that surrounded them before birth. They start responding to sound and music from the prenatal period and their musical responses become sophisticated after birth. They show recognition of sounds and music from their prenatal exposure. The prenatal period is related to early musical experiences of infants and their musical enculturation seems to begin before birth (Parncutt, 2015).

2.2.2 Musical predispositions of infants

Infants are believed to be naturally receptive to music and capable of learning from incidental as well as intentional exposure to music (Adachi & Trehub, 2012). Research into the musical predispositions of new-borns and infants has revealed their abilities to process musical qualities, such as pitch, rhythm and timbre. Melodic contour is thought to be highly salient to infants (Chang & Trehub, 1977a; Trehub, Bull, & Thorpe, 1984). Infants as young as five months old were reported to show a familiarity with short melodic contours after frequent exposure (Chang & Trehub, 1977a). In addition to pitch patterns, infants were reported to be able to perceive rhythm and tempo by discriminating the temporal groupings and frequency variations (Chang & Trehub, 1977b; Trehub & Thorpe, 1989), and to perceive timbre of the sounds by classifying tones of different spectral structure (Trehub, Endman, & Thorpe, 1990).

Research also has shown young infants' relatively 'open ears' and the absence of musical enculturation compared with older infants or adults, which led them to perform better in detecting tuning or temporal changes than adults who are accustomed to a Western musical culture[2]. For example, 9-month-old infants showed better performance than adults in detecting the tuning changes in the context of an invented non-Western scale structure (Trehub, Schellenberg, & Kamenetsky, 1999). Furthermore, another study showed that 6-month-old infants perceived simple as well as complex metrical patterns, while the adult counterparts only did so in simple metrical patterns which are a characteristic of Western music (Hannon & Trehub, 2005a). However, infants as old as 12 months showed similar culturally-specific responses to musical rhythms as adults did, although they were also better at rhythmic distinction in a foreign context than adults after brief exposure (Hannon & Trehub, 2005b). In addition, infants' listening preferences for consonant intervals (e.g. Di Stefano et al., 2017; Masataka, 2006; Trainor, Tsang, & Cheung, 2002) has been attributed to the familiarity to the Western preference for consonant intervals (Plantinga & Trehub, 2014). In

[2] Throughout the thesis, the 'Western' musical culture or 'Western' music refers to idioms that characterise high art and popular musics in the so-called developed world, such as exemplified in English-speaking societies.

general, research suggests that infants have an innate musicality, which is gradually shaped by the process of musical enculturation that enhances their musical ability as defined by their located maternal musical culture.

Infants are sensitive to the expressive aspects of music. For example, infants' retention of the absolute pitch details of songs seemed to be dependent on the expressiveness of the songs – they treated the transposed version of familiar songs as the original version (Plantinga & Trainor, 2005), while remembering the absolute aspects, including absolute pitches, of the expressively sung lullabies (Volkova, Trehub, & Schellenberg, 2006).

Infants are observed to exhibit musical preferences for specific acoustic features, as well as the expressive or emotional qualities of sounds and music. Infants were reported to prefer listening to infant-directed (ID) speech (Fernald, 1985) and ID singing (Trainor, 1996). The preference for ID singing was also observed in new-born infants with deaf parents (Masataka, 1999), suggesting the inheritance of a listening preference and a predisposition free from the prenatal experience with maternal speech or singing. ID speech is characterised by its higher pitch level, wider pitch ranges and exaggerated intonation (Fernald, 1985) (also see Section 2.2.3). Fernald (1985) argued that the infants' early selective responsiveness to ID speech may have its origins in innate perceptual, attentional, affective predispositions to process sounds, together with the infants' experiences of vocal interaction with the adults. The higher pitches and simplicity of forms of ID speech were thought to have perceptual advantages to infants (Fernald, 1985). However, recent research has shown that infants' preference for pitch level might be context-dependent, as they have been shown to prefer low-pitched over high-pitched versions of lullabies and high-pitched over low-pitched versions of play songs (Tsang & Conrad, 2010). In addition to the preference for ID speech and ID singing, the expressiveness of the vocal sounds seemed to be another factor that attracts infants' attention. For example, infants were observed to show more attention to ID singing that was rated with having a more loving tone, demonstrating the infants' response to the emotional quality of the singing voice (Trainor, 1996). Another study of 4-13-month-old infants revealed infants' preferences for vocal expression of high-arousal happiness or joy (Corbeil, Trehub, & Peretz, 2013). Infants' musical preferences might also be affected by multi-modal experience. For example, 6-month-old infants were reported to prefer maternal singing to maternal speech when they were exposed to audiovisual episodes (Nakata & Trehub, 2004). To sum up, infants' musical preferences seemed to show their predisposition in processing and responding to certain musical features, including its expressive qualities. Their musical preferences may also be context-dependent and enhanced by multi-modal experiences.

2.2.3 Musical communication in caregiving

Infants' early musical development seemed to be related to the human biological nature of communicative interaction between parents and infants (Papoušek & Papoušek, 1981). Infants communicate their needs and desires from their earliest months of life. They express their discomfort and satisfaction through sounds and are also sensitive to the reactions that their vocalisations provoke (Tafuri, 2008). Parents and caregivers have a strong propensity to talk to their infants from the moment when they are born (Papoušek, 1996). The features of vocal communication between parents and infants is found to be full of musical elements, such as pitch and melody, temporal pattern and rhythm, loudness and accents, and timbre and harmony (Papoušek, 1996).

The way of parents' and caregivers' talking to infants is known as infant-directed (ID) speech, motherese or parentese. ID speech is characterised by higher pitch, wider pitch ranges, longer pauses, shorter utterances, and more prosodic repetition, compared with adult-directed speech (Fernald & Simon, 1984). During vocal interchanges, parents and caregivers demonstrate intuitive propensities of adjusting their vocal, visual, facial, and tactile stimulations in ways that correspond to infants' perceptual and cognitive capacities, preferences and linguistic level (Papoušek, 1996; Saint-Georges et al., 2013). Parents' ID speech was observed to reflect the behavioural-emotional states of infants and serve the functions of the modulation of infants' arousal and attention (Papoušek, 1994, 1996; Saint-Georges et al., 2013). ID speech is regarded as playing an important role in infants' cognitive and social development (Saint-Georges et al., 2013), and it may be the earliest form of music education (Papoušek, 1996).

Infants are thought to 'communicate with innate skill, compelling sympathetic responses from their parents and generating cooperative narratives of emotion' (Malloch & Trevarthen, 2009, p. 2). When mothers and infants communicate effectively, each is highly 'attuned' to the vocal and physical gestures of each other (Dissanayake, 2000; Malloch, 1999). Malloch and Trevarthen (2009) called the musical elements of the co-operative and co-dependent communicative interactions between mother and infant 'communicative musicality', comprising three dimensions of musically-communicative elements: 'pulse' - the individual expressive vocalising events; 'quality' – the melodic and timbral contours of the vocalisation; and 'narrative' – built from the units of pulse and quality that share the emotion and create meaning in these joint activities (Malloch, 1999). Through musical communication, infants are understood as active participants in influencing their own developmental pathways (Young, 2016). Moreover, Dissanayake (2000) emphasised the mother-infant musical interaction in promoting emotional regulation and bonding on both the side of mothers and infants.

Parents throughout the world are reported to sing to their infants in the course of their caregiving practice (Trehub & Gudmundsdottir, 2015; Trehub & Trainor, 1998). The style and repertoire of maternal singing to infants is linked to embedded cultural ideals. For instance, in agrarian societies in the developing world, where infants' survival is a primary concern (Trehub & Gudmundsdottir, 2015), mothers sing lullabies or soothing songs, as infants are supposed to stay calm and contented; while in the more developed world, the dyadic relationship of infants and caregivers is commonly emphasised and they tend to provide a stimulating environment for infants by animated play, including singing play songs, which usually come with distinctive actions (Eckerdal & Merker, 2009; Trehub, Becker, & Morley, 2015; Trehub & Trainor, 1998). Nevertheless, both singing styles are characterised by their multi-modal features: in the former, the infants hear the singing while feeling contact and movement; in the later, the infants see mother's facial expressions and actions while listening (Trehub, Ghazban, & Corbeil, 2015). The role of mothers is viewed as a singing mentor for their infants – their mentoring is initially intuitive for the purpose of infants' emotional regulation, and infants' mimicking performance prompts mothers' more deliberate singing, contributing to infants' singing progression from single-syllable vocal interaction to musical phrases and songs (Trehub & Gudmundsdottir, 2015). In general, maternal singing appears across different cultures, with different musical features and caregiving purposes. Mothers sing to infants initially for the caregiving practice, but their intuitive attunement and deliberation on singing in response to the vocal skills of infants gradually play a mentoring role in children's vocal and singing development.

2.2.4 Vocal development of infants

Early vocalisation of infants serves an important function in both music and language development (Chen-Hafteck & Mang, 2012). Infants' earliest vocal production is crying. Research into infants' crying has revealed that it contains musical and prosodic structures, such as specific melodic contours and preferred intervals (Wermke & Mende, 2009). The melodic contours of new-borns' crying seemed to be related to their native languages exposed to them (Mampe, Friederici, Christophe, & Wermke, 2009). From the age of two months, infants started producing non-cry vocalisations or cooing (Papoušek, 1996), and the difference in vocal expressions were found to be related to sound stimuli provided by their maternal culture. Tafuri and Villa (2002) explored early vocalisations of Italian infants who had received weekly musical sessions since the prenatal period. The findings revealed that the musical patterns of vocalisations, termed as 'musical babbling', were demonstrated in the infants from 2 months old onwards, highlighting that regular musical exposure might contribute to the infants' vocal development. Vocal productions of 4- to 6-month-old infants are characterised by 'vocal play', in which infants were observed to have persistent

motivation to produce, repeat and modify different sound qualities in their vocalisations (Papoušek, 1996). From 7 months onwards, infants begin producing 'canonical babbling', which was commonly associated with language acquisition, but was regarded to contain musical qualities such as regular-beat rhythms and short musical patterns (Papoušek, 1996). From 9 months old onwards, young children start producing 'melodic utterances', in which their vocalisations are more distinctive in melody and rhythm, and the melodies of their singing can be more clearly identified (Chen-Hafteck & Mang, 2012). Young children's first words and first songs start to emerge by the age of one, in which singing and speaking become more distinct from each other (Chen-Hafteck & Mang, 2012). In general, the vocal development in infancy is characterised by an increasingly diverse vocal activity (Welch, 2015), which is shaped by the language and other sound stimuli provided by their maternal culture. The vocalisations for speech and singing often become more distinctive by the age of one.

2.2.5 Infants' behavioural responses to music

Dancing to music has been essential to human culture since ancient times (Fujii et al., 2014), and the observed human capacity to synchronise bodily movements to an external acoustic beat is believed to enable human behaviours of dancing and music-making (Kirschner & Tomasello, 2009). Bodily responses to music occur from the first year of life. After being able to turn their attention to the audio source, infants began to show rhythmic movements to music, such as swaying from side to side, or bouncing up and down (Moog, 1976). Tafuri (2008) noted that the motor responses of infants and young children are usually encouraged by songs and music that have a very clear rhythmic structure, such as a distinctive regular beat. Infants are reported to show rhythmic movements to music (Ilari, 2015; Zentner & Eerola, 2010). For instance, in a Finnish study, infants aged from 5 to 24 months showed more rhythmic movements to music and patterned sounds, compared to speech (Zentner & Eerola, 2010). On the other hand, Ilari (2015) replicated Zentner and Eerola's (2010) study on 30 Brazilian infants, and her findings highlighted the factor of cultural variations that might result in different levels of rhythmic entrainment. In addition to the rhythmic movements, research indicated that infants were able to adjust their movement in response to the speed of music, such as making quicker movements when the music changed from slow to fast (Ilari, 2015; Moog, 1976). Infants were reported to be unable to synchronise their bodily movement fully until they grew older (e.g. Hargreaves, 1986; Ilari, 2015). However, empirical research has shown that infants synchronised their movements to the articulated structure of adult speech in an interactive context as early as the first day of life (Condon & Sander, 1974), and a more recent study revealed that 4-month-old infants were able to synchronise their movements to musical tempi during listening to music (Fujii et al., 2014). Overall,

infants not only show bodily movement to sounds and music, they seem to demonstrate their perception of musical rhythm and pulse by the movements, although these behaviours may be subject to the social and cultural environment that they experience.

2.2.6 Summary

This section has explored evidence of different aspects of musical development in infancy. Literature suggests that infants have inherent musical abilities, such as processing the pitch contours and temporal features of music, as well as being sensitive to the expressive aspects of music. However, their musical abilities and preferences are gradually shaped by the features of their maternal musical culture. Musical activities in the first year of life are characterised by the communicative nature between infants and caregivers, which involves vocal interchanges and mutual-imitation between each other. The mutual attunement in vocalisation between infants and caregivers and maternal singing serve the purpose of emotional regulation as well as promoting infants' vocal development. Through musical communication, infants play an active role in influencing their own musical development pathway. The vocal development of infants is characterised by distinctive phases of vocal activities from crying and early vocalisations to production of melodic utterances, which are shaped by their native languages and sound stimuli in their maternal culture. By the age of one, the vocalisations for speech and singing are more recognisable. Research into infants' musical responses demonstrates their innate ability to respond to sounds and music by various forms of bodily movements. Infants and young children tend to show synchronisation to the beats of music to different extents, which might also be supported by an interactive social context.

2.3 Musical development of young children

2.3.1 Singing development of young children

The singing behaviours and development of young children in preschool years demonstrate an expansion of singing ability. A singing repertoire that reflects the musical culture experienced by the children is gradually built up (Welch, 2015). Between one and two years old, there is a marked advance in spontaneous singing in terms of the number and length of the songs (Moog, 1976). According to Dowling (2000), these spontaneous songs are 'clearly differentiated from speech patterns by their rhythmic regularity and their tendency to elongate vowels on discrete pitch levels' (p.116). Young children's earliest singing has been observed to consist largely of repetition and alternations of brief musical phrases, with clear melodic and rhythmic features (Dowling, 1984). Words seem to play a supporting role in the

formation of musical phrases, as young children were observed to use repeated words along with singing (Moog, 1976). From two years old onwards, young children's singing is characterised by incorporating the familiar melodies or lyrics of their musical culture into their improvised singing, which has been called 'pot-pourri' songs (Moog, 1976), 'outline' songs (Hargreaves, 1996) or 'referent-guided improvisation' (Mang, 2005). Young children's ability to imitate the songs of their maternal musical culture has led to research into the development of singing in-tune. Research revealed different developmental pathways. For instance, Welch (1998) proposed four phases of singing development, in which words of songs appeared to be the initial centre of interest, which is represented in young children's chant-like singing and a descending contour, before they were able to match the melodic outlines accurately. The initial focus on the words of the songs is also supported by findings from Moog's (1976) and Davidson's (1994) studies. However, a more recent study into young children's singing of their favourite songs revealed a mastery in tonality in song singing before the words (Gudmundsdottir, 2015). On the other hand, characteristics of maternal language are regarded to be influential in singing development. For instance, a similar pitch centre in speech and singing voices were found in children who spoke tonal language (Chinese), compared with English-speaking children (Mang, 2001). Furthermore, monolingual Cantonese-speaking children were rated as singing more accurately in-tune than bilingual English children (Mang, 2006). These findings demonstrated the variations of different developmental pathways of singing which might be context-dependent. It has been concluded by Welch (2015), that singing behaviours in the preschool phase 'relate to the young child's acquisitive, playful, creative, and spontaneous nature as they engaged with and make sense of their ''local musical world''' (p. 444).

2.3.2 Young children's rhythmic movements to music

Young children's synchronisation of bodily movement to musical beats becomes more apparent after infancy. For instance, in Moog's (1968) study, a small number of children between the ages of eighteen months and two years began to match their movement to the rhythm of heard music. Children of 2-4 years of age were reported to show synchronised movements to the beat structure of the music by hopping, jumping, circling and swaying, although there was little evidence of their adjustment to new tempi (Eerola, Luck, & Toiviainen, 2006). Furthermore, children's ability to synchronise their movement to the beats of music were found to be enhanced by the social condition. For instance, preschool children were found to synchronise their drumming with higher accuracy during joint rhythmic activity (Kirschner & Tomasello, 2009). In general, young children are able to make a range of behavioural responses to the rhythmic and temporal qualities of music, and their responses seem to be facilitated by an interactive social context.

2.3.3 Young children's music-making with objects and instruments

The musical development of young children is also examined from their spontaneous music-making activities. Young children demonstrate a range of musical behaviours when they have opportunities to play with musical instruments or sound-makers. For example, Swanwick and Tillman (1986) explored musical composition of children aged from four to nine years in a Primary school in London. These children were asked to make up a pattern or piece of music by using a set of tuned and untuned percussion instruments offered by the researchers. By analysing the musical productions of these children at different ages, the findings indicated that young, preschool children's music-making ability developed from the control of sounds to an increasing 'concern for expressive character and structural relationships' (p.319), and the appearance of short, conventional musical pieces (Swanwick & Tillman, 1986). Furthermore, based on the empirical evidence, Swanwick and Tillman (1986) also proposed a music-developmental model to address different characteristics of musical behaviours in different age phases (see section 3.1.3). A more recent study (Delalande & Cornara, 2010) investigated young children's (10-37 months) solitary exploration of musical instruments (zither and a pair of cymbals). The findings identified these children's musical development of 'sound discovery' through repetition and variation in sound-making, in addition to the sensational aspects throughout the activity. On the other hand, Young (2003, 2013) argued that major music-developmental models ascribed young children's musical activities to 'phases of random, exploratory play' (Young, 2003, p. 48). She suggested that 'multimodal analyses' of young children's music-making activities were preferable, in which patterns of young children's music-making behaviour are understood in the corresponding bodily movement, material environment, and social interaction with others. For example, in her study on young children's spontaneous music-making, Young (2003, 2008a) proposed that young children's musical production was structured by 'space' (bodily movement and environment) and 'time' (temporal patterns), and children collaborated their music-making with one another through non-verbal means, such as gestures, bodily movement and facial expression. Overall, young children's music-making ability seems to develop from free exploration to the creation of a structured piece where their musical production is concerned. However, their musical development is regarded as more deliberate when the process of music-making, the environment, and the child's social interaction with others are considered to be part of their musical production as a whole.

2.4 Musical activities in the family context

The family environment is regarded as the primary site for young children to experience music when they are born into the world. Through exposure to various musical genres and opportunities for music-making on their own or with others, young children develop musical abilities that are defined by their local musical culture and begin the formation of their musical identities (Campbell, 2011; Finnegan, 1989). Research into young children's musical experiences within the family context has been focused on a wide range of topics, including musical resources in the home environment, with a highlight on technology and media (e.g. de Vries, 2009; Lum, 2008; Young, 2008b; Young & Gillen, 2007); musical interactions in the family (e.g. Barrett, 2009; Custodero, 2006); the impact of parental backgrounds and beliefs on children's musical experiences (e.g. Custodero & Johnson-Green, 2003; Custodero & Johnson-Green, 2008; Ilari, 2005; Ilari, Moura, & Bourscheidt, 2011); musical parenting (e.g. Gibson, 2009; Ilari, 2005); and the process of musical enculturation within the family (e.g. Mapana, 2011). These research foci reflect important aspects, such as the materials, social interaction, and parental musical biographies that play a role in shaping young children's daily musical experiences within a family context.

The growing interest in children's musical experiences in the home environment partly draws on the concept of 'musical childhood' (Young, 2013), which originated from the field of the sociology of childhood. Childhood studies not only acknowledge the ongoing development of children, but they also report the various meanings given to these across cultures and suggest that the focus on the development might neglect the activities, expectations and resources provided by social institutions that mediate and shape their early years educational experiences (Young & Ilari, 2012). The field of ethnomusicology has raised an awareness of how musical practices are culturally embedded and culturally diverse and, in particular, has illuminated how music interweaves with the social lives of children. Rogoff (2003) proposed the concept that human development lies in their 'participation' in their cultural community, highlighting the social nature of human activities that takes into account wider contexts, such as society, culture, religion, economics and historical backgrounds, and how these factors interrelate with each other. For young children, musical learning becomes synonymous with joining in a social activity (Young & Ilari, 2012). Following the concept of childhood studies, there has been a growing interest in 'everyday' musical experiences of young children, which are likely to take place in the home environment (Barrett, 2009; Young, 2008b; Young & Gillen, 2010). These studies explore the social and culture nature of young children's musical experiences and highlight the role of young children who participate in their cultural environment and influence their own musical development.

The following sections present various aspects of young children's musical experiences within the family context that might play a role in shaping their musical development.

2.4.1 Musical activities in the home environment

Many studies have shown that music is often a prominent activity in the family home (e.g. Ilari, 2005). Musical activities take place throughout the day and are often embedded in family routines or prompted by the environment (Barrett, 2006; Gingras, 2012) . Children may engage in a variety of musical activities in their family home, such as singing, listening to and moving to music, and playing musical instruments For example, an innovative project 'A Day in the Life' investigated the notion of 'a thriving child'. Seven two-year-old girls in diverse international locations were video-recorded across a whole day. Results indicated that 'musicality' was highly salient to the lived experiences of the focus children in the form of multi-modal experiences and performances (Young & Gillen, 2010). Musicality, in the researchers' view, included not only song singing, listening and dancing to music, but it also included instances of rhythmic or vocalised activity woven into the days' ongoing events. In general, young children's musical experiences in the family context are supported by a nurturing environment provided by the family, such as in the materials for music-making and music-listening, opportunities for musical interactions, and a positive value held for musical provision.

Singing was reported to be the primary and constant musical activity in the home environment (Gibson, 2009; Ilari, 2005), especially between mother and infant (Custodero & Johnson-Green, 2008; Ilari, 2005). For the family with toddlers and older children, singing activities still exist, but in various forms and contexts. For instance, a study of American families with 3-year-old children revealed that singing was integrated into daily routines, which also helped maintain or construct family traditions, while improvised singing usually accompanied play activities (Custodero, 2006). Family singing repertoires are different from one family to another. Lullabies and playsongs appeared to be the most popular styles used by mother–infant dyads (Ilari, 2005). Parents were reported also to sing songs that drew from their childhood memories (Gibson, 2009), or from their cultural heritage, which seemed to retain the cultural origin of the family (Gibson, 2009). Family members also invented songs or changed lyrics of familiar tunes, which were perceived to be likely to retain or create a sense of family identity (Custodero, 2006; Gibson, 2009; Gingras, 2012). With respect to the effect of families' immigration history on the singing repertoire of the mothers, contradictory results were revealed. For example, the Canadian mothers with immigration backgrounds were reported to listen to and sing lullabies and children's songs of their culture and in their native languages to their infants more often than in the languages used in the

host country (Ilari, 2005). However, the song repertoire of the mothers who were first- or second-generation British citizens had an absence of the songs belonging to the family or cultural heritage, and their singing repertoire was replaced by the songs typical of English nursery education (Young, 2008b). These variations might reflect the different strategies and values in the extent of assimilation into the host society through music.

Research into musical activities in the family has also explored the functions of singing and music-making. For example, a longitudinal case study into the functions of song-making and music-making of a young child revealed that the child understood her social world through invented songs and music-making, and that her self-identity gradually developed through these musical activities. Furthermore, a study into the everyday musical engagement of a child demonstrated the functions of a family's singing and music-making in language development, emotional regulation and the foster of family unity (Barrett, 2009). A more recent study of early shared musical activities in the home suggested that the potential benefit of parent-child musical activities in the home with young children's development of prosocial skills (Williams et al., 2015). Research has also explored the functions of children's singing activity when they are alone. A study investigating toddlers' private spontaneous singing at bedtime suggested the functions of these singing behaviours were as a way for the toddlers to demonstrate and practise musical skill, reflect, experiment, self-soothe, and understand their own worlds, and raise the value of the private space for young children to be engaged in music (Sole, 2017). In general, musical activities in the family context support the family routine and formation of family identity and enhance young children's musical development as well as social, emotional and language development.

Singing and music-making in the family was reported to be integrated into parenting practice. As a caring practice, parents use music to assist children with the regulation of their physical and emotional states. These include, for example, arousing children with a rhythmic lap game or soothing the children with soft singing, and these musical interactions seemed to be characterised by the provision of kinaesthetic experiences through close physical contact between parents and children (Young & Gillen, 2010). Joint music-making in the family was reported to serve the function of regulating children's behaviour and emotional states (Barrett, 2009; Young and Gillen, 2010) . To achieve a fine adjustment in the physical and emotional status of their children, the parents drew on their own live vocalising and bodily movement, which seemed to be 'immediate, intimate, and could be more finely tuned to the dynamic of the moment' (Young & Gillen, 2010, p. 67).

Overall, there is a variety of musical activities within the home environment, which are characterised by social interaction between young children and parents/siblings and the role

of music in supporting family routines and identities, as well as children's development. The availability of technology and media seemed to shape the nature of musical experiences in the home, as they provide additional musical exposure and opportunities for musical engagement (see 2.4.2).

2.4.2 Technology and media in the home environment

Technological advances that led to the digitisation of music have resulted in changes in the nature of music and musical practices in the home for very young children (Young, 2008b). Young children with the economic privilege of access to technology and media have been immersed in a media-rich environment. As noted by Persellin (2016), the digital age has allowed children to enjoy singing and dancing to music from a range of media and technological products, such as iPods, television programmes, boom boxes, electronic games, computers, and modern musical toys and instruments.

Research has explored the range of media and technology that may provide opportunities for young children's musical engagement in the family. For instance, in her investigation on family's music-making in America, Gingras (2012) highlighted the role of technology that all of the families heavily relied on to provide background or sing-along music. Furthermore, the recorded music that was played from TV, CD or computer games prompted family singing activities and children's improvised singing. Lum (2008) investigated the home musical environment of first-grade (7-8y) Singaporean children, with a focus on the influence of media and technology. The results indicated that the media available in the home, such as TV, CDs, DVDs, radio and computers, not only created a soundscape that reflected the family's culture and popular culture among the children, but that children also actively responded to music by dancing and singing along with media in their fantasy play (Lum, 2008). Another UK study on musical experiences of children under two revealed that young children listened to music played from media such as radio, TV, and electronic musical toys, with more exposure to popular music than nursery rhymes, as a result of an influence from the mother's musical choices (Young, 2008). Furthermore, Young (2008) emphasised how digitalised music was integrated into all manner of items in young children's daily lives, but warned at that time of the poor musical quality and a cultural bias towards a Western musical selection played from these battery-driven toys. She also noted that contemporary media and digital technology are characterised by their multi-modal nature, and children's musical experiences in these contexts often blend with visual images on screen or page, animations, texts, sound and speech and material objects (Young, 2008b; Young & Gillen, 2010). In general, the growing presence of media and technology in the life of young children play an important contemporary role in shaping their musical experiences (Ilari, 2011).

More recently, the increasing popularity of the Internet and 'new technologies' (Chaudron, 2015; Young, 2016) among young children, such as devices with a touch-screen feature, has been recognised and reflected in various large-scale national and international investigations (e.g. Chaudron, 2015; Marsh et al., 2015; Ofcom, 2017; Rideout & Hamel, 2006; Rideout, Vandewater, & Wartella, 2003). For instance, an Ofcom[3] report on children's media use and attitudes in 2017 indicated that, compared to their 2016 report, there was a growing amount of young children's Internet use[4], which was associated with their increasing ownership of tablets (Ofcom, 2017). Furthermore, an increase was also found in the use of YouTube[5], with the category of 'cartoons / animations / mini-movies or songs' on YouTube seen to be the most popular choice, as reported by parents of 3-7s (Ofcom, 2017). Another UK report on preschool children's play and creativity in using apps revealed that children have extensive access to tablets that are owned by themselves, or shared among family members (Marsh et al., 2015). Findings from this report also indicated that these young children favoured the apps that allowed them to watch videos, listen to music, play games, and had a connection to their popular cultural interests across television, films and iconic characters (Marsh et al., 2015). In addition, a Taiwanese survey (n=876) on young children of a 'touch-screen generation' also indicated the commonality of young children's use of '3C'[6] products, such as smart phones, tablets and computers (Wei & Chuang, 2016). Overall, the prevalence of new technologies among young children is likely to enrich their daily listening experiences. However, there is little information regarding how the experiences of these new technologies may play a role in shaping young children's musical development.

Children's media include children's TV channels, CDs and DVDs that are designed for child consumers. These media usually contain musical elements, such as songs, background music or sound effects. In the UK, the national children's channel 'Cbeebies' was reported to be watched by eight in ten 3-4 year old children through TV or its website and app, and it was regarded to be educational by nine out of ten parents of users (Ofcom, 2017). Research has explored the characteristics of children's musical DVDs and their appropriateness for child development. For instance, an Australian study of music and screen media in the lives of young children suggested that most of the DVDs under analysis did not seem to match the musically-developmental characteristics of young children, such as in providing a model of musical interaction and featuring a temporally synchronous and audio-visually congruent experience (Brooks, 2015b). Nevertheless, Ilari (2011) argued that

[3] Ofcom is the communications regulator in the UK.
[4] According to the Ofcom report, there were 53% of 3-4s and 79% of 5-7s going online.
[5] There were 48% of 3-4s and 71% of 5-7s using YouTube, increasing by 11% and 17% respectively.
[6] 3C refers to Computer, Communication and Consumer electronics.

the positive value on the early childhood period for brain development has 'transformed the entire culture of early child parenting', with many parents believing that musical toys, CDs and DVDs are more efficient in delivering music and learning experience to their children. An Australian study, for example, reported that parents of preschool children relied on the commercial products of CDs and DVDs mainly for their entertainment value, and also for the learning of other domains, such as literacy and numeracy (de Vries, 2009). Overall, children's media seemed to be expected by parents to contain educational purposes. However, more research is needed to explore new media's educational functions and influence on young children's musical experiences.

Technology and media available in the home environment seemed to be the sources from which children access and take part in children's popular culture. Marsh (2005) wrote that the term 'popular culture' in relation to young children usually 'refers to those cultural texts, artefacts and practices which are attractive to large numbers of children and which are often mass produced on a global scale' (p. 2). Furthermore, these goods of popular culture are usually linked by common themes and are related to popular television or film characters and narratives (Marsh, 2005). Popular culture produces and disseminates powerful narratives, music and iconic images that dominate everyday lives of children via media (Brooks, 2015a). Arthur (2005) suggested that popular media culture creates a shared frame of reference that children draw on in their play. Children learned music from popular culture through radio and television programmes, from observing older siblings and parents engaged in music technology, and from imitating and emulating popular tunes and advertisement jingles (Persellin, 2016).

The family's consumption of technology and media seem to be related to parenting practice and the family's culture. For example, parents were observed to play pre-recorded music to their children, using music 'as self-entertainer, as a surrogate companion', which only required parents' partial involvement and offered them a brief respite from direct caregiving practice (Young & Gillen, 2010). For the children and families with immigrant backgrounds, or belonging to ethnic minorities, musical engagement with technology and media may immerse them with a sense of their ethnic identity and serve a role of cultural transmission. This takes place in the form of musical activities of their cultural traditions, such as Karaoke singing in Filipino musical identity (Lum, 2008), as well as listening to the musical repertoire of their cultural heritage from CDs or YouTube, including the songs originating from the motherland of the parents and singing and dancing (Gingras, 2012).

To sum up, particularly for those families with economic privilege, young children are immersed within a media-rich environment in their daily lives. The use of media and

technology arguably enriches their musical experiences, although this is also shaped by other factors, such as a family's musical preferences, parenting practice, the family's cultural background and children's popular culture. The significance of 'new technologies' in young children's musical development, however, is an under-researched area.

2.4.3 Musical activities outside home environment

Within the family context, musical activities are extended from the home environment further into the community and other places where the family experiences and makes music together. These places include, for example, music sessions where parents and children participate together, and in the car, where the family experience music in a shared space.

For children as young as neonates to three years of age, regular musical sessions organised by early years musical experts have been recommended, as the musical experiences of one-to-one interaction and group music-making, with parents' engagement, were both thought to be crucial for children's musical development (Tafuri, 2008). A typical session may last for 30 to 40 minutes, comprising a small group of people who are engaged in a range of musical activities that stimulate children's musical experiences. Taking the private musical programme ILM in Japan as an example, Adachi and Trehub (2012) listed the possible components of a lesson for one-year-old infants, which included singing special theme songs for starting or ending a lesson, singing standard children's songs, singing action songs, sensorimotor expression, listening to classical music and picture-book reading with background music. The benefits of attending musical sessions are demonstrated, for example, in a longitudinal study in Italy, where participating families were committed to weekly musical activities beginning from the mother's sixth month of pregnancy. The outcome was a high percentage of children (71%) who could sing in-tune at the age of three or even earlier (Tafuri, 2008). Research into music groups has also focused on parental attitudes towards the parent-child musical activities in children's centres, where group sessions aiming for general development are provided. For example, a study investigating parent-child musical activities with young children in interdisciplinary Children's Centres in England explored practitioners' and parents' attitudes towards such musical activities (Pitt & Hargreaves, 2016). The findings suggested that, while the practitioners emphasised the learning and development benefits, parents were more concerned about the social and emotional reasons of attending music groups. Local music programmes may also serve a role of facilitating parenting practice in general as well as in musical aspects, such as introducing songs for parents to use for parent-child interaction at home and emotional regulation of children (Barrett, 2009).

Being transported takes a considerable proportion of time in the lives of young children (Lamont, 2008). Car journeys may create joint family musical experiences. In Lamont's study of musical engagement of 3.5-year-old children in England, it was revealed that the car was the only form of transport being used, and music was present in almost all episodes of travelling (48 out of 49 episodes). However, there were frequent arguments about which music was to be played, especially amongst those families who had more than one child. The forms of musical activities during transportation seem to be less variable. For instance, a study investigating the musical practice of a Chinese Family in Singapore revealed that radio was the most frequent media that they played during the car journey, through which they listened to and sang along with the latest hits of Chinese popular music (Lum, 2009). Furthermore, children as young as 5 years old enjoyed listening to the radio in the car. Another study in Australia, on the other hand, recorded the singing activities between siblings during their car journey (Barrett, 2009). According to the studies above, music seems to be an essential element to accompany the time when the family travel, although the forms of listening and singing as the main musical activities may be due to the restriction of the space and time in the car. In addition, the choice of musical activities may be related to culture and the child-rearing practices of the family.

2.4.4 The role of family members

Children's musical activities at home are often stimulated by family members. Parents and siblings are both influential in shaping children's musical experiences and development. The significance of parental engagement or support in musical activities was stressed by Finnegan (1989), who, by describing the musical practice that she found in Milton Keynes, indicated that parental support such as the modelling, joining or facilitating of musical activities plays a crucial part in shaping children's musical pathways in their life. The family members are thought to be influential in the musical experiences and musical identity of young children. A study of family music-making suggested that parents and older siblings influenced the emerging musical identity and behaviour of children – first as musical guides and later as musical co-players (Gingras, 2012). The interaction between siblings is also a strong stimulation for musical learning. For instance, Barrett's (2009) research revealed that the older sibling, although barely at the age of 4, played the role of a teacher who encouraged the younger child's language use while singing, and also acted as a music-making partner who sang and performed with the sibling. Where there is a broader family structure, such as a tribal community, the whole community of members can be as important as parents and siblings in constructing the children's musical world (Mapana, 2011). In general, as Young and Ilari (2012) noted, a more experienced adult or older child may explicitly model and guide the child's musical participation, such as singing or dancing

together, and they may watch, encourage, support, and enable young children's musical participation in an informal, unstructured manner (Young & Ilari, 2012).

Parental influences are also found in a broader sense, in which young children's musical lives and development might be shaped by the musical backgrounds of parents (Custodero & Johnson-Green, 2003; Ilari, 2005), religious affiliations (Woodward, 2016), musical beliefs of parents (Ilari, 2005) and cultural values on parenting (Lum, 2016). Parents with previous musical experiences are reported to be associated with a higher frequency of music listening and singing with their children (Custodero & Johnson-Green, 2003; Ilari, 2005). Furthermore, an investigation into the musical parenting of Brazilian mothers revealed a general belief among these mothers of the existence of appropriate music for children (Ilari, 2005). In addition, Lum (2016) investigated the role of parental goals in influencing the musical development of the children, with a perspective on Chinese families in Singapore. Parental goals in his study were defined as 'the values, beliefs, attitudes, and aspirations held by parents in shaping the special goals they hold for their children' (p. 140). The results suggested that these parents were keen to provide their children with formal music lessons from a young age and aimed for ABRSM[7] qualification, which had a focus on Western classical music. Furthermore, the parents valued their children's musical learning as bringing enjoyment and bonding to the family, glorifying their religions, promoting the development of perseverance and discipline, preserving a Confucian ethos of becoming a good person, and creating a pathway to a prosperous future (Lum, 2016). Overall, parental musical biographies and their values on music learning and parenting seem to influence musical provision for their children.

2.4.5 Musical activities in the family context and musical enculturation

A concept of drawing on socio-cultural factors in the process of children's musical acquisition and development has been termed 'musical enculturation'. Merriam (1964) defined enculturation as the learning of culture, and its characteristics of being life-long and a never-ending process were emphasised. Musical enculturation is, therefore, the learning process of one's musical culture(s). Campbell (2011) indicated that family was the first site where a newborn child learned cultural behaviours, including music. According to Campbell, children's musical identities stem from within the family and then encompass larger contexts, such as extended families, school and community. Research into musical enculturation, besides stressing the role of family, suggests that various factors are important. Mapana (2011), for example, described the musical enculturation of a tribe in Tanzania, revealing that 'imitation' is a frequent component of the enculturation process, and that the children

[7] ABRSM is Associated Board of the Royal Schools of Music

acquired musical skills through active participation in cultural events within the community, which requires preservation and transmission to the next generation. Campbell (2011), in recognition of the distinct identity of families which allowed a deeper understanding of enculturation, indicated that families may retain child-rearing practices, as well as languages and cultural traditions, but other factors such as media and policy also need to be taken into consideration in children's enculturation processes. It is recognised that, in terms of children's musical enculturation, family serves as the first and main role in the provision of key cultural experiences to young children.

Musical activities in the family seemed to serve the role of strengthening the transmission of the cultural heritage that is related to the family history and/or the cultural origins of the parents. An American study of musical lives in the family found cultural and religious connections to family music-making (Gingras, 2012). The findings suggested that cultural heritages were strengthened through a range of musical activities, such as choosing an Australian music group to attend, singing German songs to children to accompany the family routine, listening to and dancing to Russian pop song CDs. The cultural transmission through music was further extended when the family participated in their cultural communities, such as attending a language school where traditional songs were introduced, or attending festive events where traditional songs might be experienced and sung (Gingras, 2012). The parent-child music activities may build their child's understandings in the context of their cultural conventions. For example, the songs of the children's culture convey the domain-specific information, such as an alphabet song, counting songs, and songs that introduce the naming of body parts (Williams et al., 2015). Home musical exposure to young children not only 'constructs' young children, but also locates them in particular family and cultural contexts (Young & Gillen, 2010). Through the musical interaction between children and parents, 'the children were being introduced into socio-cultural ways of behaving when music is around, whether it is to sing and dance to it, to socialise with it and to relate to others through it, to use it as a resource for emotional self-regulation or to allow it to recede into a background and be largely ignored. Music, in this sense, structures behaviour and identity in families in ways that the children were absorbing and learning (Young & Gillen, 2010, p. 75).

2.4.6 Summary

This section reviewed the current literature on young children's musical experiences within a family context. Musical environment in the family home was characterised by a range of technological and digital products that are reported to facilitate young children's musical experiences and the participation in the children's musical culture, which is partly created by the children's media products. There are a variety of musical activities in the home, in which

young children were engaged through social interaction with family members, or on their own. Musical activities within the family serve different functions, from promoting young children's musical as well as social, emotional and language development to enhancing the identity and unity of the family. The role of family members, including their musical backgrounds and beliefs, seemed to play a role in shaping young children's musical development.

2.5 Summary of the chapter

This chapter presented a review of literature written on musical development of children from prebirth to five years old and their musical experiences within a family context that potentially play a role in shaping their musical development. Newborns and young infants exhibit a musical predisposition in processing melodic and rhythmic features of music, as well as showing sensitivity to the expressive qualities of music. Their musical abilities are gradually shaped by their native language and features of the dominant musical culture through communication with caregivers, as well as exposure to music of the local culture. Young children's early singing is characterised by repetition of short musical phrases before they are able to sing a complete song. However, there have been different findings regarding the dominant role either words or tonal features play in early singing, reflecting a likely variance in young children's developmental pathways and the potential contextual factors that contribute to such differences. Young children's musical experiences in family contexts reveal the important roles of the material and social environments in the family home, as well as the musical backgrounds and cultural beliefs held by the parents. These aspects were considered to have a potentially important influence on young children's musical development.

Chapter 3 Framing the musical development of young children

In order to investigate the musical development of young children and how their family contexts as part of the Chinese diaspora in London might shape their musical development, two theoretical frameworks are applied in the current study. Firstly, the SoI-EY framework (Voyajolu & Ockelford, 2016) is applied as a tool to examine the nature of young children's musical behaviours and musical development. Developed from the original Sounds of Intent (SoI) framework (Welch & Ockelford, 2008) and drawing on literature as well as empirical evidence, the SoI-EY framework considers young children's musical behaviours to be defined within three domains of Reactive, Proactive and Interactive behaviours, each of which spans four levels from level 2 to level 5. Secondly, the Ecological Systems Theory (Bronfenbrenner, 1979, 2005) is applied as a theoretical lens to gain an insight into the features of the musical environment of young children. By applying the Ecological System Theory, the musical environments of young children are conceptualised into Micro-, Meso-, Exo-, Macro- and Chronosystems. The mechanism of how each system relates to each other and how the aspects of contextual factors might play a role in shaping young children's musical development will be addressed.

This chapter is organised into the following sections: Section 3.1 introduces the background of the SoI-EY framework and the considerations of applying this framework to this study. Section 3.2 presents the background of the Ecological Systems Theory framework, its relationship to the current music education research, and the consideration of how to apply this theory in the present study. Section 3.3 explains a rationale for the combining the SoI-EY framework and Ecological Systems Theory model in this study. The chapter is summarised in Section 3.4.

3.1 Sounds of Intent in the Early Years

Voyajolu and Ockelford's (2016) research into the 'Sounds of Intent in the Early Years' (SoI-EY) framework is being applied in the current study as an investigative tool to examine the musical development of young children. The following sub-sections present an overview of the SoI-EY framework and how this framework will be applied in the present study.

3.1.1 Overview

The SoI-EY framework (Voyajolu & Ockelford, 2016) is a newly-developed framework that explores the musical development of 'neurotypical' young children aged from birth to five.

This framework has been extended and developed from the original Sounds of Intent (SoI) framework (Welch & Ockelford, 2008), which was initially designed to explore the musical development of children and young people with complex needs (Vogiatzoglou, Ockelford, Welch, & Himonides, 2011). The development of the SoI-EY framework drew on three sources of evidence: the existing literature on early musical development of 'neurotypical' children, a core concept of zygonic theory (Ockelford, 2006, 2013), and observations of children's musical engagement (see Section 3.2.3). The SoI-EY framework is designed for parents and early years practitioners to enable them to gauge the level of musical development of young children in order to offer effective support in their musical growth.

One fundamental concept that underpins the SoI-EY framework is the notion of 'zygonic theory' (Ockelford 2006, 2013), which offers a model in which the musical structure may be understood through cognitive processes. According to the zygonic theory, there are three levels of music-structural understanding – events, groups and frameworks. Within each level, the understanding of musical structure occurs when the imitation between musical elements or features were perceived. It is argued that the development of musical understanding of events, groups and frameworks is broadly sequential, but 'complex, fussy and context-dependent' (Voyajolu & Ockelford, 2016).

Based on zygonic theory and the original SoI framework, the SoI-EY framework identifies four levels of young children's musical understanding: an awareness of sound (Level 2), simple patterns in sound (Level 3), musical fragments (Level 4) and the whole pieces of music (Level 5)[8]. Furthermore, in recognition of the multi-dimensional process of young children's musical behaviours, the SoI-EY framework conceptualises young children's musical engagement across three domains: Reactive (children respond to sound and music), Proactive (children create sound and music on their own), and Interactive (children interact with others through sound and music). Overall, young children's musical behaviours and development are mapped into 12 matrices based on the combination of 3 domains and 4 levels, as presented in Figure 3.1. Figure 3.1 illustrates the SoI-EY framework as a set of concentric circles divided into three segments, representing the Reactive, Proactive and Interactive domains respectively. In each domain, musical behaviours span from Level 2 to Level 5, which are presented from innermost to outermost of the concentric circle. Figure 3.1 provides 'headlines' of each column that summarise the expected musical behaviour that

[8] According to the original SoI framework, observed musical behaviours span from Level 1 (a child neither showing response to sounds and music, nor creating sounds and music intentionally on their own or with others) to Level 6 (a child being a skilled and expressive performer, with the cultural knowledge of musical pieces). Based on existing literature, there are no reports of neurotypical young children functioning at SoI Level 1 or Level 6 (Voyajolu & Ockelford, 2016). Therefore, the present SoI-EY model spans from Level 2 to Level 5.

characterises each matrix of domain and level. In Figure 3.2, each headline further comprises four ‘elements’, labelled as A, B, C, and D, which give descriptive representations of the musical behaviours within the matrix. Overall, with the concept of domain, level and element of young children’s musical behaviours, the SoI-EY framework provides a lens through which the complexity and dynamics of young children’s musical development may be examined.

Whilst the SoI-EY framework provides general music-developmental stages based on the literature and informed by the observational evidence, it is suggested that children’s musical development is a complex rather than linear and clear-cut process, and so the boundaries between levels and elements are fuzzy. Furthermore, it is argued that the rate at which children develop musically appears to be context-dependent, and so the framework is not age-related (Ockelford, 2015; Voyajolu & Ockelford, 2016). In other words, as defined by the SoI-EY framework, individual children have a unique music-developmental pathway and profile that depend on their personal learning and musical experiences. Environmental factors, such as the influence of the adults’ support, have been highlighted, and further investigation on the environmental factors is warranted.

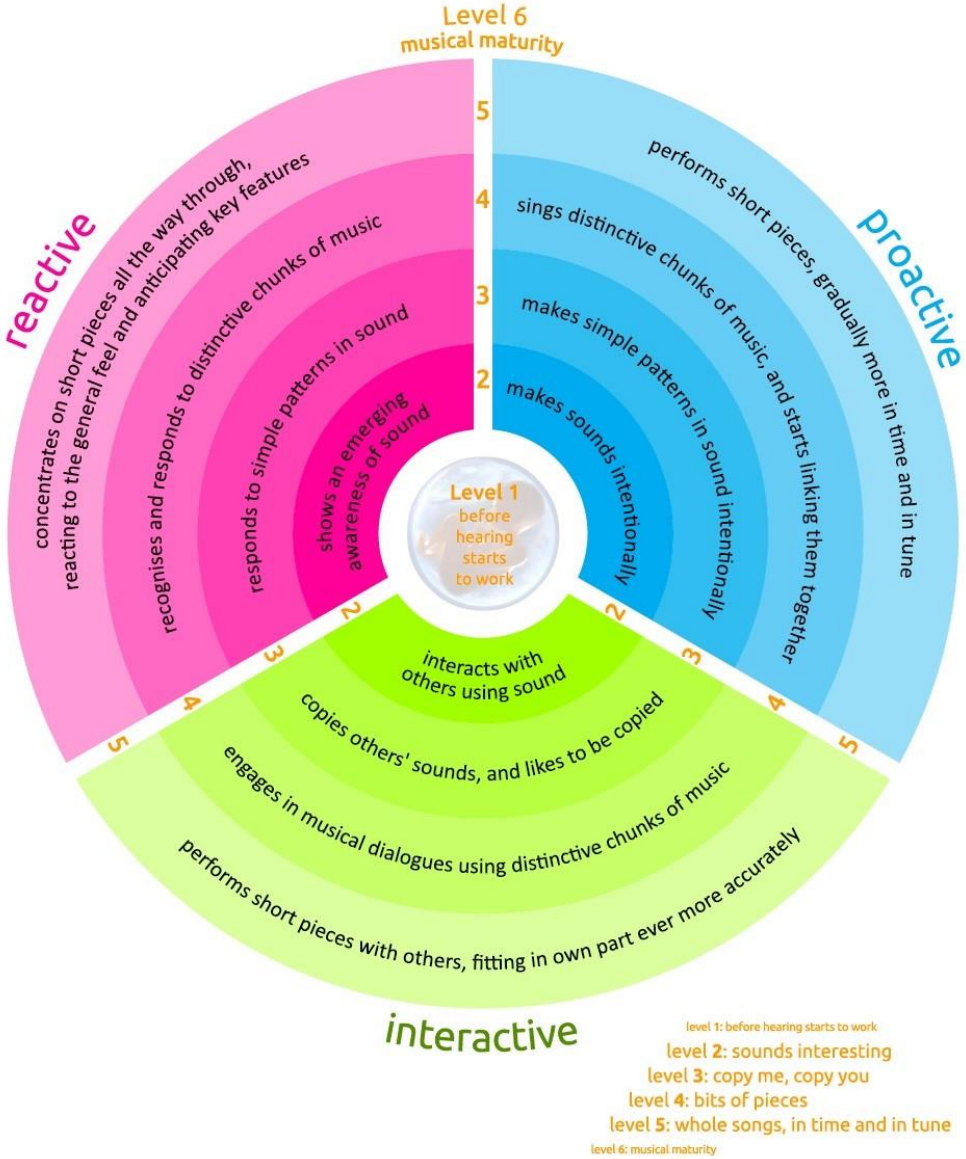

Figure 3.1: The SoI-EY framework with the 'headlines' that summarise the musical behaviours in each matrix of domain and level (http://eysoi.org)

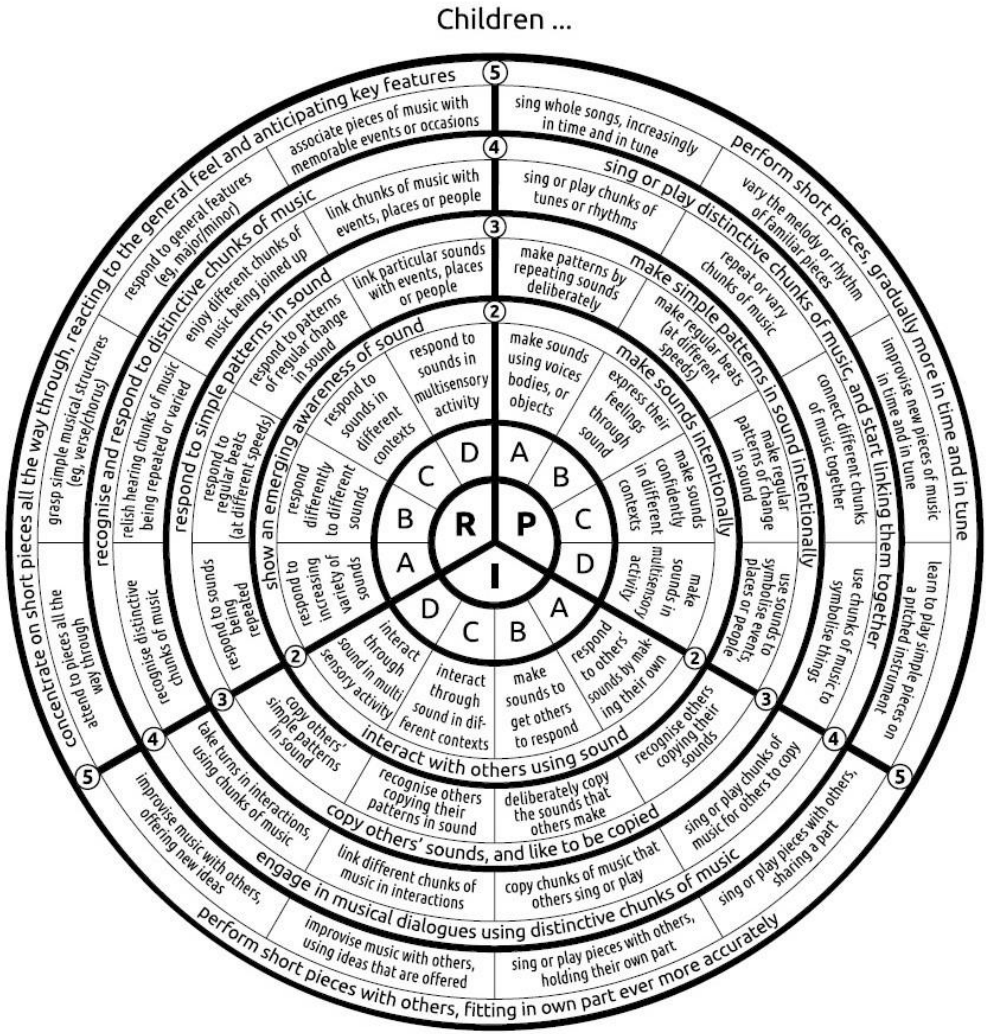

Figure 3.2: The SoI-EY framework with four elements (A, B, C, and D) within each matrix (Voyajolu and Ockelford, 2016)

3.1.2 Findings from the SoI-EY project

Informed by the existing literature on musical development in the early years, the SoI-EY project was intended to gather observational data in order to compare the early years application with the original SoI model, seeking to what extent the new evidence supported, extended or contradicted the original model in a mainstream early years context (Voyajolu & Ockelford, 2016).

Observations with 58 children aged from 10 weeks to 4 years were carried out over six months in an Early Years Children's Centre located in South West London. The centre served the needs of local families with diverse socio-economic status and cultural backgrounds. The observations were conducted for two hours per week and were video-recorded. Video data was also supplemented by field notes in order to set out the contextual information of the observed musical engagement of children. A total of 125 observations sessions were generated, which provided 'snapshots' of children engaged in musical activities. These observations demonstrated a range of social contexts for children's musical engagement, such as being on their own, or with peers and adults, child-led or adult-led, and spontaneous or structured forms of musical activities.

Detailed analysis of the observations revealed that musical development did not appear to be a clear-cut process, and that the children might exhibit musical behaviours at different levels within one musical activity. The transition or shift between different levels within a single musical activity was termed as a 'zone of ambiguity' (Voyajolu & Ockelford, 2016), as it was difficult to identify where the lower level ended and upper level began. Furthermore, it was proposed that different SoI-EY levels may overlap in a child's evolving musicality, and that the musical development at a new level may start before its lower level has completed. The overlapping of the SoI-EY levels may also contribute to the multifaceted nature of musical engagement, as children may engage in music across a range of levels of which they are capable, such as singing a whole song (Level 5), copying rhythmic patterns (Level 3), or exploring a new instrument by making sounds (Level 2), depending on the situation, the surrounding environment and other people in proximity (Voyajolu & Ockelford, 2016). It was suggested that, while the examples of 'overlapping' levels were evident in single observations on different children, multiple observations on one child over time and in varying contexts may provide a more comprehensive picture of the child's musical development (Voyajolu & Ockelford, 2016).

The findings also highlighted the significance that the environment plays in children's musical learning and development. For example, a child was observed to exhibit a higher

level when singing in a group and led by a teacher than singing on her own. This differentiation was framed by the Vygotskian concept of 'zone of proximal development' (ZPD) (Vygotsky, 1978), which was defined as '…those functions that have not yet matured but are in the process of maturation, functions that will mature tomorrow but are currently in an embryonic state' (Vygotsky, 1978, p. 86). Voyajolu and Ockelford (2016) indicated that the child's musical ZPD lay between the SoI-EY levels that the child could achieve independently and those which it could achieve with the support of more advanced peers or adults. The experiences of the group music activity seemed to have allowed the child to exhibit more advanced musical skills. Furthermore, conceptualising the SoI-EY levels with the ZPD theory, a developmental trajectory was established (see Figure 3.3), as musical reactivity was considered to precede interactivity and proactivity. Voyajolu and Ockelford (2016) wrote, 'Specifically, knowledge and perception are internalised through listening experiences within the reactive domain, before being externalised through engagement in the interactive domain. If the child's initial efforts are supported by others they are then realised proactively, demonstrating the ability and confidence to create or replicate material alone' (p. 108). The trajectory was also evident in the case of a long-term impact. For example, a child who had rich musical experiences in his home environment was found to exhibit higher levels of musical behaviours compared with other children at the same age, which indicated the child's inner musical growth through sustained musical interactivity with his parents. However, the observed trajectory of musical development that evolves from reactive behaviours to interactive and proactive behaviours is not in accordance with the existing literature on, for example, innate ability of infants' vocalisation. Research suggests that infants use sounds to communicate their needs and infants' initial behaviours of crying and non-cry vocalisation were both found to contain musical features (Papoušek & Papoušek, 1981; Wermke & Mende, 2009). Therefore, the developmental trajectory reported by the authors in the original development of the SoI-EY project is likely to provide only one possibility for the developmental path or only fit into certain types of music learning, but is unlikely to represent the whole picture of children's musical development.

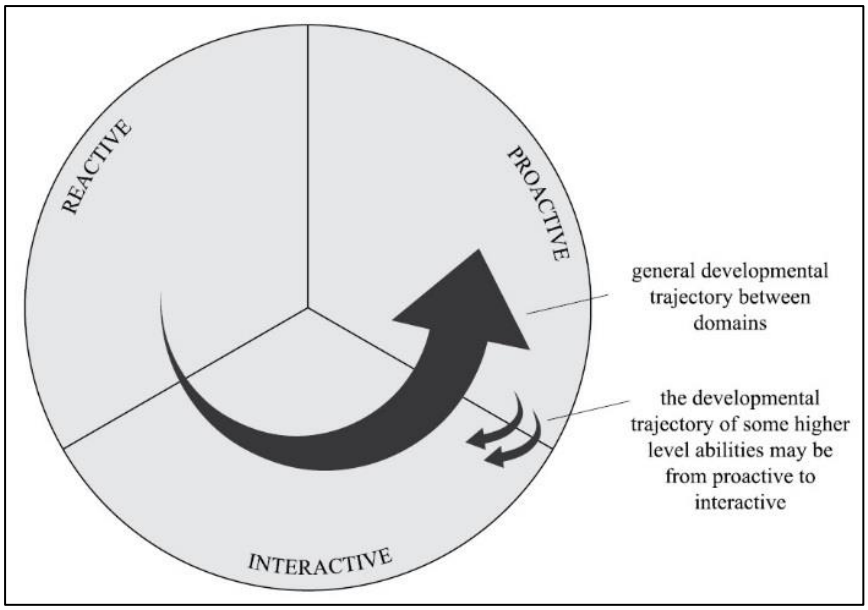

Figure 3.3: The postulated trajectory of musical development across domains (Voyajolu & Ockelford, 2016)

3.1.3 The SoI-EY framework and the present study

The present doctoral study aims to investigate the nature of musical development of young children of the Chinese diaspora in London. A theoretical framework that addresses all aspects of musical development of young children was needed for this study. Several models of musical development were considered. For example, in Swanwick and Tillman's (1986) 'Spiral of Musical Development', there were four levels, embracing eight developmental modes that sequentially occurred to children according to their age level. The age range of preschool children fell into the first two levels: at the Mastery level, children aged 0-4 were characterised by a sensory exploration of sound sources and an increasing control of musical patterns; at the Imitation level, children aged 4-9 were characterised by personal expressiveness and the repetition of conventional musical phrases. Swanwick and Tillman's (1986) spiral model focused specifically on young children's ability in music-making with musical instruments, which they referred to as 'composition'. However, other aspects of musical development, such as musical responses and singing behaviours, were not explored. In addition, this model was not designed specifically for preschool children, but included a wider age range towards adolescence. A framework that more fully explores musical behaviours and development of young children, with a focus on the preschool age range, was felt to be more appropriate for this study.

The choice of the SoI-EY framework as an investigative tool in this study was based on the following considerations. Firstly, this framework provides a grounded theoretical foundation for this study in examining musical development of young children under five years old, through which the music developmental profile of individual children might be mapped and examined. Secondly, the development of the SoI-EY framework was based on empirical fieldwork of 'snapshot' evidence from multiple children, whereas longitudinal data of multiple observations of individual children over time is needed in order to create a more comprehensive picture of young children's musical development (Voyajolu & Ockelford 2016). The choice of the SoI-EY framework in the current study, therefore, seeks to expand the knowledge of young children's musical development through the lens of this newly-developed framework, in particular with a longitudinal perspective, and with a more focused cultural perspective on Chinese families, which may also complement and critique the current SoI-EY framework. The SoI-EY framework evolved from the original Sounds of Intent framework (Welch & Ockelford, 2008), which was grounded in data from children with special needs. The phases of development with the original SoI framework were also found to be applicable to mainstream early years in general. The SoI-EY version has been similarly grounded in hundreds of observations (e.g. Voyajolu & Ockelford, 2016), including preschool settings. Finally, as contextual influences are recognised within the SoI-EY framework, the present study also seeks a more comprehensive understanding of how contextual factors could be related to young children's musical development.

3.2 Ecological Systems Theory

Drawing on a socio-cultural perspective for understanding musical development of young children, Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1979, 2005) is applied as a theoretical lens to examine various contextual factors in this study. The following sections will introduce the theory, its application in music education research, criticism of the theory, and how the theory will be used in this present study.

3.2.1 Overview

Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1979, 1992, 2005) provides a systematic understanding of processes and outcomes of human development. Bronfenbrenner suggested that human development may be defined as 'the phenomenon of constancy and change in the characteristics of the person over the life course' (Bronfenbrenner, 2005, p. 108). The core concept of the Ecological Systems Theory is the recognition of human development as 'a joint function of the *person* and *environment*'

(Bronfenbrenner, 2005, p. 107), with a systematic view of complex mechanism in the environment. The study of the ecology of human development was defined by Bronfenbrenner as:

> *the scientific study of the progressive, mutual accommodation, throughout the life course[9], between an active, growing human being and the changing properties of the immediate settings in which the developing person lives, as this process is affected by relations between these settings, and by the larger contexts in which the settings are embedded (Bronfenbrenner, 2005, p. 106).*

In other words, Ecological System Theory is in accordance with a socio-cultural perspective in investigating human development, as it considers the social and cultural aspects of environmental phenomenon that might contribute to development. Moreover, the theory recognises the role of an individual in effecting their own development through perception of and interaction with the environment.

In the proposed model, Bronfenbrenner (1979, 1986) conceptualised the environment as a mechanism that comprised a nested framework of different 'systems', with a developing individual located in the innermost part of the structure. The systems from the innermost to the outermost of the ecological model are: Microsystem, Mesosystem, Exosystem, Macrosystem and Chronosystem. Figure 3.4 illustrates an Ecological System Theory model, in which a developing child is surrounded by layers of systems. Each system represents an aspect of influential context, from face-to-face interaction in the immediate environment (Microsystem) to the abstract beliefs and ideology embedded in the overall structure (Macrosystem) and the consideration of the passage of time and temporal factors (Chronosystem). The characteristics of each system are described below.

[9] This definition in his 1992's work is unaltered from the original definition published in 1979, except for the addition of a clarifying phrase of 'throughout the life course'.

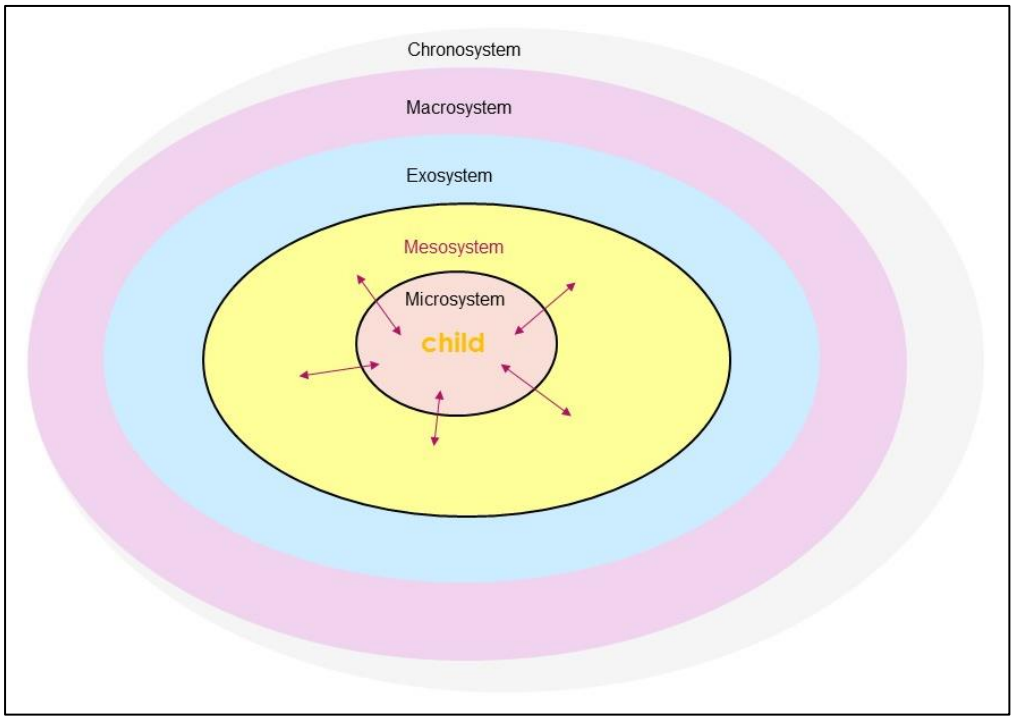

Figure 3.4: The Ecological Systems Theory model (Bronfenbrenner 1979, 1986)

A Microsystem constitutes the settings in which the people can readily be engaged in face-to-face interaction, such as home, school, and community. A Microsystem is defined as '*a pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics'* (Bronfenbrenner, 1979, p. 22). Furthermore, the term 'experienced' was emphasised, as the significance of Microsystem was not only the objective properties in the setting, but how the properties were perceived by the individual. In other words, Microsystem reveals the physical environment of the setting, as well as the how an individual is engaged in the activities taking place in the setting and his or her interaction with people or materials in the setting.

Bronfenbrenner referred to the interconnections between the immediate settings as Mesosystem, which he regarded to be influential in human development. A Mesosystem comprises '*the interrelations among two or more settings in which the developing person actively participates*' (Bronfenbrenner, 1979, p. 25). A Mesosytem for a child might include the relationships among home, school, and neighbourhood, and a new mesosystem is formed whenever the individual moves into a new setting.

An Exosystem constitutes the environment indirect to the individual, but that might play an influential role in their immediate setting. According to Bronfenbrenner, the Exosystem was defined as '*one or more settings that do not involve the developing person as an active participant, but in which events occur that affect, or are affected by, what happens in the setting containing the developing person*' (Bronfenbrenner, 1979, p. 25). The examples of the Exosystems are the parents' work place, parents' network of friends, or a school class attended by a sibling. In short, the Exosystem considers the settings or phenomenon to be influential to the developing person without the presence of the person.

A Macrosystem is the cultural and value system that serves as the blueprint of the behaviours of the people in the settings. According to Bronfenbrenner, the Macrosystem refers to:

> *consistencies in the form and content of lower-order systems (micro-, meso-, and exo-) that exist, or could exist, at the level of the subculture or the culture as a whole, along with any belief systems or ideology underlying such consistencies (Bronfenbrenner, 1979, p. 26).*

A Chronosystem considers the continuities and changes occurring in the environment across the life course that might be influential to human development (Bronfenbrenner, 1986). A Chronosystem constitutes multiple dimensions of temporality (Lerner, 2005), such as individual life events (entering school or severe illness), and historical period in which a person has lived.

In his later work, Bronfenbrenner (2001, 2005) proposed the concept of 'proximal processes', which he referred to as the 'primary engines of development'. In describing proximal processes, he elaborated the forms of interactions in the immediate environment and stressed the regularity of the interactions to be essential in the processes:

> *Over the life course, human development takes place through processes of progressively more complex reciprocal interaction between an active, evolving biopsychological*[10] *human organism and the persons, objects, and symbols in its immediate external environment. To be effective, the interaction must occur on a fairly regular basis over extended periods of time (Bronfenbrenner, 2005, p. 6).*

In sum, Ecological Systems Theory provided a theoretical framework to investigate human development by providing a systematic perspective to consider various factors and

[10] By using the term 'biopsychological', Bronfenbrenner (2001) recognised the role of genetic inheritance of an individual that plays in human development, in addition to environmental factors.

mechanisms in a person's environment and highlighting the role of the individual in effecting his/her own development through 'proximal processes'.

Recent research extended the concept of the ecological systems in response to contemporary phenomena. The influence of technology on a child's development was highlighted and added into the ecological model, as the emergence of Ecological Systems Theory was prior to the Internet revolution. To address the role of technology in the existing ecological model, Johnson and Puplampu (2008) proposed the 'techno-subsystem', which is conceptualised as a dimension of the microsystem. The techno-subsystem constitutes technological devices and how the developing child interacts with these devices in various social contexts. According to Johnson and Puplampu (2008), the techno-subsystem serves as the mediator of bidirectional interaction between the child and the microsystem.

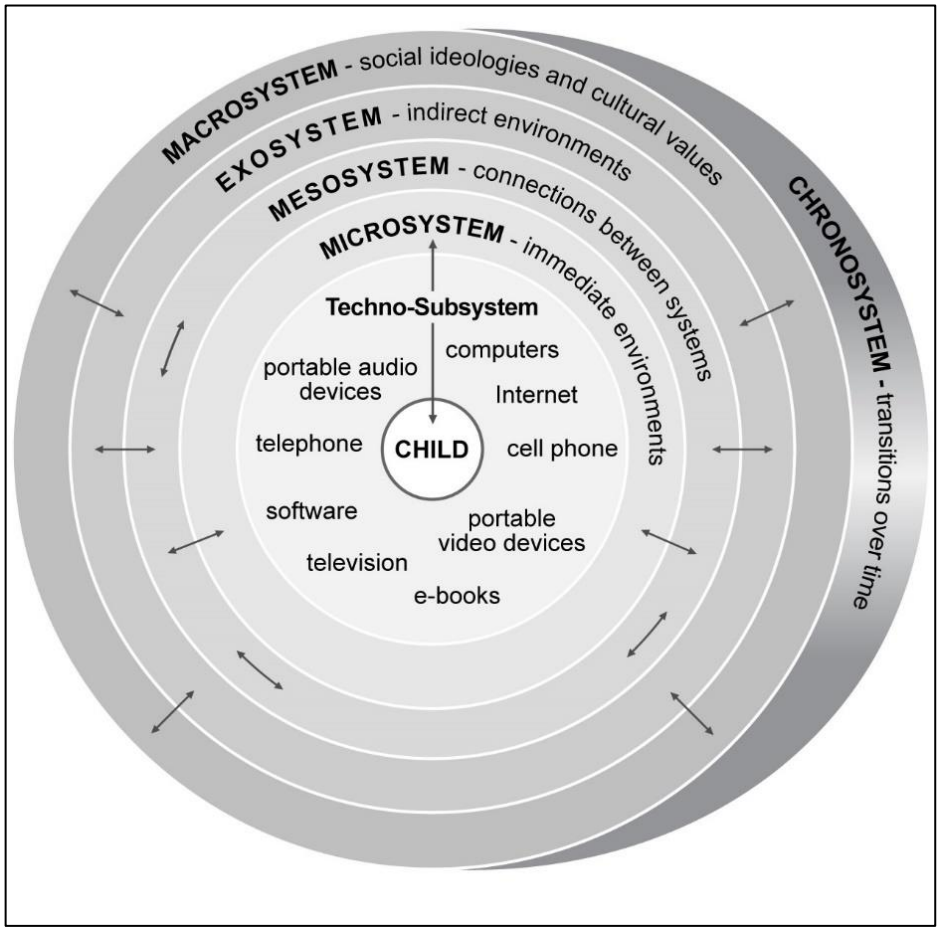

Figure 3.5: The Ecological Techno-Subsystem (Johnson & Puplampu, 2008)

The concept of the ecology of human development has received criticism with regard to its systematic view of the context. For instance, Rogoff (2003), based on her perspective of human development as the cultural participation in communities and the mutual constitution between individuals and cultural processes (p.51), argued that the ecological perspective had been 'treating individual and cultural process as separate entities' (p.44) and constrains ideas of the relations between the two. For Rogoff (2003), human development is culturally defined and 'can be understood only in light of the cultural practices and circumstances of the communities – which also change' (p.3-4). However, Bronfenbrenner pursued the understanding of processes and outcomes (biological characteristics) of human development, which are partly shaped by cultural forces. Therefore, the criticism on the Ecological Systems Theory originates from diverse perspectives on ways of understanding human development.

3.2.2 The Ecological Systems Theory in music education research

With a socio-cultural perspective on human development and the recognition of the active role that an individual plays in affecting their development through interaction with the environment, Ecological Systems Theory has been suggested as a useful theoretical framework in contextualising children's musical development (Campbell, 2011), musical learning (Gaunt & Hallam, 2009), and the formation of musical identity (Lamont, 2002). A number of empirical studies have applied Bronfenbrenner's Ecological Systems Theory to address aspects of musical development and music education and were regarded as precedents to the present study. For example, Lamont (1999) incorporated aspects of Bronfenbrenner's Ecological Systems Theory into a developmental model of musical pitch perception in children. She suggested that musical development could be seen as a constant and ongoing process of mediation between particular cultural values that led to particular activities and the formation of personal representations (cited in Hargreaves & Lamont, 2017). Lum (2007), on the other hand, applied the systematic macro- to micro-perspectives of Bronfenbrenner's ecological model to examine the musical lives of Singaporean children, which revealed the influences from the settings of home, school and community to larger social systems that were driven by politics and cultural identity in a Singaporean context. In addition, Preti (2013) contextualised 'music in hospital' interventions on children with illness. In her adapted social ecological theory, family as a unit was identified in the child's Microsystem as the family that not only affected the child's emotional reaction to illness, it also affected the child's responses to music. In general, Ecological Systems Theory has provided a useful theoretical lens in examining socio-cultural factors that play a part in aspects of children's musical experiences and development.

3.2.3 The conceptualisation of young children's musical environment through the Ecological Systems Theory

The present study investigates the nature of musical development of young children in the Chinese diaspora in London, and how their musical environment within a family context might shape their musical development. Ecological Systems Theory is applied as a theoretical lens to examine young children's musical environment within the family context. Through the lens of Ecological systems Theory, Figure 3.6 illustrates how young children's musical environment within a family context might be influential in their musical development, based on current literature.

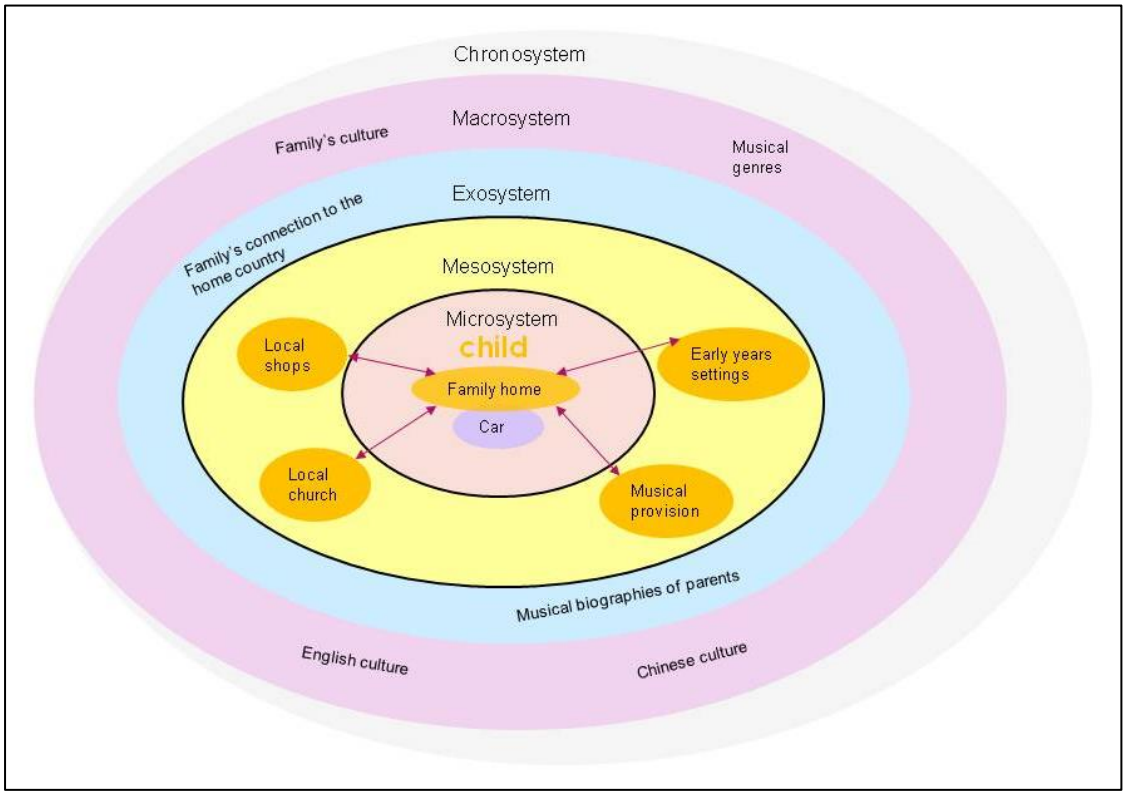

Figure 3.6: Young children's musical environment within a family context, being conceptualised through Ecological Systems Theory model (c.f. Bronfenbrenner 1979, 1986)

The Microsystem represents the musical activities in the family home and in the car. The home environment features the materials available for music-listening and music-making, various forms of social interactions between the family members that may provide opportunities for musical interactions, and parental beliefs on general parenting and on music learning. With respect to the musical materials in the home environment, the availability of technology and media were reported to be shaping the nature of musical

experiences of contemporary children (Brooks, 2015a; Gingras, 2012; Ilari, 2011; Lum, 2008; Persellin, 2016; Young, 2008b). In addition, the family car as a transport action is regarded as an extension of the home 'on wheels'. Young children were reported to experience music through listening to music, singing and music-making with their family during the car journeys (Gingras, 2012; Lamont, 2008; Lum, 2009). Musical activities in the family home and in the car highlight the roles of parents and siblings in young children's musical engagement through various forms of social interactions (Barrett, 2009; Custodero, 2006; Gingras, 2012; Ilari, 2005). Parental beliefs on general parenting and musical parenting, which included their values on music learning, were also reported to be influential in the musical provision for their young children (Gibson, 2009; Ilari, 2005; Lum, 2016).

The Mesosystem represents the family's musical engagement in the local community. Children might experience music through the family's participation in a range of institutions, organisations or facilities in the local area. These include early years provision, various playgroups and music groups, and local facilities such as church and shops. For example, Adachi and Trehub (2012) described private musical sessions, which were normally attended by young children and their mothers. Young children experience local musical cultures through the family's participation in the community.

The Exosystem represents the musical biographies of parents and siblings. Musical biographies include their previous music-listening and music-learning experiences in childhood and later in life, as well as their musical preferences. For instance, it was reported that parental musical experiences were associated with musical provision for their children (Custodero & Johnson-Green, 2003; Ilari, 2005). Musical biographies of the family members are not directly participated in by the child but might play a role in shaping daily musical experiences of young children.

The Macrosystem represents aspects of the cultural repertoire and belief systems that might have an impact on young children's musical experiences and development. The word 'culture' is broadly referred to here as learned behaviours and/or beliefs shared by a small group of people or larger set of population in a society or a country. As defined by Merriam (1964) , 'culture as a whole is learned behaviour, and each culture shapes the learning process to accord with its own ideals and values (p.145). Campbell (2011) indicated that the family was the first site where a newborn child learned cultural behaviours, including music. According to Campbell, children's musical identities stem from within the family and then encompass larger contexts, such as extended families, school and community. To fit the cultural background of the participant families in this study as part of Chinese diaspora in London, the potential cultural influences on young children's musical development include

English culture, Chinese culture and the family culture. Furthermore, the cultural influences are divided into two facets: firstly, the cultural influences on music, such as the exposure and learning of musical genres from cultural heritage; secondly, the cultural influences on the parental values on general parenting and musical parenting.

The Chronosystem represents the temporal patterns that occur in the child's life that might have an impact on their musical experiences and development. One example is the repetition of musical exposure or music-making over time that might contribute to the familiarity of musical pieces. For instance, it was reported that young children tended to repeat short musical phrases vocally before they were able to sing whole musical pieces as songs (Welch, 2015). Furthermore, considering the focus of this study on young children of Chinese diaspora in London, annual visits to their home countries might also be influential in enculturing them into language and music in a Chinese context.

Overall, drawing on the current literature with the theoretical lens of Ecological Systems Theory model, different aspects of young children's musical environment that might play an influential role in their musical development can be mapped onto the Micro- to Chronosystem model. This adapted framework (Figure 3.6) served as a theoretical foundation for this study in exploring potential social and cultural factors in shaping young children's musical development.

3.3 A rationale for combining the SoI-EY framework and Ecological Systems Theory model

The present study aims to investigate the complexity of musical development of young children of the Chinese diaspora in London, and to identify various contextual factors that might be related to their musical development. By conceptualising musical behaviours into three domains (Reactive, Proactive, and Interactive) and four levels (2 to 5), the SoI-EY framework provides a tool to examine the variety and patterns of young children's musical behaviours over time. Furthermore, through the lens of Ecological Systems Theory model, the potential contextual factors and their interrelationships that may play an influential role in such development are also explored.

The combination of the SoI-EY framework and Ecological Systems Theory does not seek the 'cause and effect' connections between two frameworks, such as attributing certain music-developmental outcomes to a single contextual factor within the ecological systems model. Instead, the mechanism of interrelated factors generated from an ecological

perspective, ranging from the environment and social interaction to cultural values and the passage of time, seeks to contextualise young children's musical behaviours and development in a holistic manner. In addition, the naturalistic approaches in this study, as opposed to experimental studies, allow the complexity of young children's musical environment to be explored.

3.4 Summary of the chapter

This chapter has reported two theoretical frameworks that might contribute to an understanding of young children's musical development through a socio-cultural and socio-musical lens. The first of these is a new empirically-based model of musical behaviour and development – Sounds of Intent in the Early Years (Voyajolu & Ockelford, 2016). This framework provides an opportunity to map observed and reported musical behaviours related to the child participants of the current study. The second theoretical framework adopts a wider conceptual lens, being focused on the interlocking environmental influences which have been found to shape children's behaviours and development in more general terms – Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1979, 2005). The combination of these two frameworks seeks to make sense of the emergent fieldwork data in exploring aspects of young children's musical development, both musically and socio-culturally.

Chapter 4 Methodology

4.1 Introduction

This chapter describes the methodological approach by which this study was conducted and the procedure for data collection and analyses. Ethical considerations and the validity of the study is presented.

4.2 Research questions

The research design is framed by the research aims and questions. The aim of this study was to investigate the musical behaviours and development of young children of Chinese diaspora in London. The objectives of this study are as follows:

1. To investigate the musical behaviours and development of the participant children in their family and local community contexts;
2. To identify different aspects of the children's socio-cultural environment that might play a role in their musical behaviour and development;
3. To investigate how the identified socio-cultural environment of the children relates to their musical behaviour and development; and
4. To explore the role of a family context as part of Chinese diaspora in London in shaping young children's daily musical experiences and musical development.

Based on the four research objectives presented above, the three research questions in this study are:

1. How do young children of the Chinese diaspora in London develop musically in their family context?
2. What socio-cultural factors might play a role in shaping daily musical experiences of young children of Chinese diaspora in London?
3. How does the young children's family context, as part of the Chinese diaspora in London, play a role in shaping their daily musical experiences?

4.3 Research approach

The current literature that has been focused on children's musical experiences and development within a family context has applied various approaches to address different research interests. For instance, Brooks (2015a) applied an ethnographic approach in exploring young children's musical experiences in music and screen media. Barrett (2009) conducted a narrative enquiry into a child's development in and through music through their musical engagement within a family context. With respect to a large number of participants, Custodero and Johnson-Green (2003) conducted a telephone survey of American mothers (n=2250) of 4- to 6-month-old infants, in which the association between their previous musical experiences and current musical parenting was explored. With respect to a smaller set of participants, an interview method has been favoured and applied in a range of topics, including the everyday musical experiences of children under two in the home environment in a UK context (Young et al, 2006; Young, 2008), and concerning Brazilian mothers' use of music with their children and their beliefs (Ilari et al, 2011).

This study does not aim to pursue universal knowledge of musical practices taking place in Chinese families in the UK. Rather, the interest of this study is to explore the likely commonalities and unique pathways of young children's musical development, which are hypothesised as being shaped by the complexity of the socio-cultural context for individual families. As Tudge (2008) warned, heterogeneity exists within any society, and children's dynamic and relative interpretation of their environment, which is based on their previous as well as current experiences, need to be considered as part of their development. In other words, every child's experiences and development are likely to be somewhat unique, even if they share similar backgrounds, such as living in the same country, or being of the same ethnicity, or even in the same family. There may also be genetic aspects of development which transcend individual cases. Accordingly, the investigation of the possible complexity of individual musical development and its informal reality predominantly requires qualitative methods (Gillham, 2000), although quantitative analyses may also be useful.

4.3.1 Case study approach

Notwithstanding the breadth of research literature on young children's musical development reported in Chapters 2 and 3, the current focus has been on children of the Chinese diaspora in London – a group not investigated previously. Consequently, given the exploratory nature of this research, it seemed appropriate to apply a case study approach in the investigation.

A case study approach is characterised by its focus on in-depth and detailed investigation on a complex phenomenon. Stake (1995) described case study research as 'the study of the particularity and complexity of a single case, coming to understand its activity within important circumstance' (p.xi). Context is regarded to play a significant part in case study investigation. For instance, Yin (2014) defined case study as 'an empirical inquiry that investigates a contemporary phenomenon (the case) in depth within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident' (p.16). A case study approach is also characterised by the focus on an 'individual unit' (Flyvbjerg, 2011), which can refer to one or more individuals, a programme, event, activity or process (Creswell, 2014). Merriam and Tisdell (2016) defined case study as 'an in-depth description and analysis of a bounded system'. In this respect, Creswell (2014) highlighted that case study was bounded by time and activity, as researchers collect detailed information over a sustained period of time. Harrison, Birks, Franklin, and Mills (2017) summarised a case study approach as 'a versatile form of qualitative inquiry most suitable for a comprehensive, holistic, and in-depth investigation of a complex issue in context, where the boundary between the context and issue is unclear and contains many variables'. In short, case study is a research approach in which a researcher seeks to investigate the complexity, dynamics and development of an entity in an intensive manner.

The characteristic of 'bounded system' that defines a case study is reflected in aspects of data collection and analysis techniques specifically for case study research. Merriam and Tisdell (2016) indicated that it was 'the unit of analysis' that characterised a case study. According to Merriam and Tisdell (2016), this characteristic distinguished case study from other types of qualitative research approach, such as ethnography, phenomenology and narrative, which were defined by the focus of the study. Since it is the unit of analysis that defines case study, Merriam and Tisdell (2016) suggested that case study could be combined with other types of studies, such as ethnography or narrative inquiry. Furthermore, case study can be conducted in a number of ways, both qualitatively and quantitatively (Flyvbjerg, 2011; Yin, 2014). Case study researchers use a variety of data collection procedures to investigate the case (Creswell, 2014). In this respect, Yin (2014), with a philosophical orientation as a realist, indicated that a case study inquiry relied on multiple sources of evidence, in which a convergence of data is sought for triangulation. According to Yin (2014), the multiple sources of evidence come from various data collection sources, such as interviews, documents, observations and archives. However, holding a position of relativist and interpretivist, Stake (1995) highlighted the interpretive role of researchers who work with their participants in the discovery and generation of knowledge. For Stake,

understandings and meanings are multiple and situational, thus, the research methods of interviews and observations are preferred, although other sources and methods of data collection might also be used. In general, a case study approach embraces all types of methods in data collection and analysis, depending on the nature of the research questions and underpinned by the philosophical orientation of the study.

A case study approach has been criticised by its inability to generalise the findings (Stake, 1995; Yin, 2014). Stake (1995), while stressing the 'real business' of case study to be particularisation rather than generalisation, explained that the generalisations could occur when a particular situation or behaviour is repeated within a case. Yin (2014) argued that case study findings, like experiments, are generalisable to theoretical propositions and not to populations and universe. He referred to the former as 'analytic generalisation', which was based on either corroborating, modifying, rejecting, or otherwise advancing theoretical concepts that are referenced in the research design or new concepts that arose upon the completion of case study (p.41).

This study aims to explore young children's musical development, with a deeper insight into how the complexity of socio-cultural contexts might shape their development. A case study approach provides an appropriate methodological foundation to carry out this study. Furthermore, the uniqueness of the findings is possible and desirable in a case study approach (Hammersley & Gomm, 2000; Stake, 2005). This study seeks the particularity of each case, as an understanding of them can 'lead to better understanding, or perhaps better theorizing, about a still larger collection of cases' (Stake, 2005, p. 446). In this study, multi-methods are applied to increase the validity of the evidence base. The methods used include semi-structured interviews, diaries and observation, supported by the literature review. Moreover, the application of two theoretical framework – Sounds of Intent in the Early Years and Ecological Systems Theory – offers the possibility of the case study findings to be contextualised within a broader theoretical position.

In order to address the nature of research interest in this study and to answer the research questions, case study was selected as the principal research approach in this study.

4.3.2 Multiple case studies

Multiple-case studies refer to a single investigation that contains more than one case to be investigated. Yin (2014) justified a multiple-case design as it applies a 'replication' concept that is used in experimental studies, as opposed to a 'sampling' concept in which the prevalence or frequency of phenomenon is desired. In replication logic, Yin (2014) proposed two concepts of replication: literal replication seeks similar findings among the cases, and

theoretical replication looks for contrasting findings among the cases with anticipatable reasons, which addresses the confirmation or modification of the theoretical framework that underpins the study. Stake (1995) remarked that case study is not sampling research, and the selection of cases should be based on the extent to which our understanding of the phenomenon can be maximised.

The current study applies a multiple-case design. Multiple cases allowed both commonality and individuality to emerge related to the socio-cultural musical environment that potentially shapes the young children's musical development. Furthermore, in recognition of the heterogeneity of Chinese diaspora in terms of their origin and cultural backgrounds, three families with different countries of origins were selected for detailed longitudinal analyses from a wider original set of families who had agreed to participate in the research.

4.4 Fieldwork

This section describes the data collection of the main study. In order to gain a comprehensive understanding of young children's musical development and how this might be shaped by the socio-cultural musical environment in a family context, the data collection procedure was designed to comprise two stages, and each served separated functions although these were interrelated in the data analyses. The following section describes the nature of each stage.

4.4.1 Two stages of data collection – exploratory stage and longitudinal stage

Data collection of the present study was divided into two stages – the exploratory stage and the longitudinal stage. In the exploratory stage, all of the participants (see below) took part in a single semi-structured interview, in which the participant's musical background, aspects of their children's musical experiences in the family context, and their expectation for their children's musical learning were explored. At the end of the interview, all of the participants were invited to continue their research participation by taking part in the longitudinal stage of this study. In the longitudinal stage, the participants began to keep a regular diary to report observed musical behaviours of their children and to provide contextual information of the reported musical behaviours over a period of six months. The parents were encouraged to provide optional additional video recordings and photographs along with their diary entries as the supplementary documents. Two more interviews were conducted with individual participants who took part in the longitudinal stage in the middle and at the end of their participation.

The aims of the exploratory stage were two-fold: firstly, to ground the knowledge of the musical experiences of young children of the Chinese diaspora in London within a family context; secondly, in recognition of extra commitment required from the participants in the longitudinal stage, the aim of the exploratory stage was also to look for potential families who were willing to continue their involvement in this study by taking part in the longitudinal stage. The aims of the longitudinal stage were to explore the musical development of young children of the Chinese diaspora within a family context over time and to gain rich and detailed knowledge regarding how the socio-cultural environment might play a role in shaping the children's musical development. An important aim of the longitudinal stage was to determine which participant families might be most suitable for detailed case study analyses, which is the principle research approach in this study. The characteristics of the exploratory stage and longitudinal stage of data collection are summarised in Table 4.1.

Table 4.1: The characteristics of two stages of data collection

	Exploratory stage	**Longitudinal stage**
Aims	1. To ground the knowledge of the musical experiences of young children of Chinese diaspora in London, including the musical backgrounds and expectation of their parents 2. To seek potential participants for the longitudinal stage	1. To determine participants for case study analyses, which focused on a. an examination of the musical development of young children; b. an exploration of how the socio-cultural context might shape the children's musical development 2. To ground the knowledge of musical development of children with the socio-cultural context in order to determine which elements might be influential to their musical development
Research methods	Interview	Interview (three times in total) Diary method Documents (video recordings, photographs) Field notes
Length	1 hour	6 months
Participants	All of the participants in this study took part in the exploratory stage	Recruited from the participants who took part in the exploratory stage

The participants in the exploratory stage could decide whether or not they would like to take part in the longitudinal stage. In other words, the exploratory stage and the longitudinal stage of data collection were defined by the timeline of individual participants, and their research participation might partially overlap with each other. The data collection period spanned from March 2014 to April 2015.

4.4.2 Participant recruitment

Several criteria for participant recruitment were established to address the research foci. In this study, young children refers to children under 5 years old who had not entered compulsory education and who were entitled to the Early Years Foundation Stage, the English educational framework for children under 5. A family qualified as being part of Chinese diaspora where one or both parents identified themselves as Chinese, and they or their older generations had a migration background to the UK. In short, the criteria of research participants in this study are: 1. The participants are parents of young children who are under 5 years old; 2. One or both parents identified themselves as Chinese and the family had an immigration background from a country outside the UK. In addition, 3. The family lived in London during the period of research participation.

Research participants in this study were recruited from the researcher's personal contacts, as well as from a number of places in which Chinese families were more likely to be reachable. These places included a Chinese church in North London and a Chinese music group in South-West London, both of which had an initial contact person known by the researcher, and both places were visited by the researcher in person. With respect to the recruitment from the Chinese church, the researcher attended the service on Sunday afternoons and conducted interviews with individual mothers during their break time between the service and Bible study groups. With respect to the participant recruitment in the Chinese music group, the researcher contacted the teacher at first and was invited to join one session. The Chinese music group was held in a local library and was attended by Chinese mothers and their children. At the end of the session, the researcher was given time to introduce herself and to invite the mothers to take part in the study. In addition, other participants in this study were also recruited through the Taipei Representative Office in the UK which introduced potential participant families to the researcher. An invitation e-letter was circulated among parents of a Chinese School in North London, and one family was recruited through this path. An invitation advert was also posted on several online forums,

such as Mumsnet and the Facebook groups joined by Chinese families in the UK, but none of the families in these online fora showed an interest in taking part in this study.

In the early stage of participant recruitment, it was noted that the majority of the potential participants who showed willingness to take part in this study came from a middle-class background and that mothers often held a Postgraduate degree. Attempts were made to broaden the variety of the sample in terms of the parents' educational and socio-economic backgrounds. For example, when visiting the Chinese church, in which Chinese families of all backgrounds were present, the researcher was keen to reach more working-class families. However, difficulties were encountered when a potential participant at the Chinese church refused to sign any consent forms or be audio-recorded, although she was happy to be interviewed. Furthermore, pressure built when the researcher needed to attend religious activities, such as the bible study group, in response to their friendly invitation. Eventually, four interviews were completed within three church visits, embracing data from the mothers holding a Bachelor degree or NVQ qualification and who came from a more working-class background. Nevertheless, the overall sample in this study was inevitably narrowed into well-educated, middle-class Chinese families in London who were sufficiently interested in the topic to participate, which became a limitation in this study (see Section 9.4).The instance of refusing to sign on the consent form also raised the question of whether there was an 'invisible' group of Chinese parents in London who were difficult to reach for research purposes or other circumstances.

Throughout the participant recruitment process, it was revealed that, in most cases, mothers were the contact person for the family when the researcher made the initial contact. If the researcher contacted the father in the first place, they acknowledged their wife as knowing their children better and passed the participant role on to their partners. In many cultures, mothers are regarded as the primary caregivers of young children, especially when the children are under two years old (Ghazban, 2013; Trehub & Gudmundsdottir, 2015). The mothers took a major role in the data collection process of interviews and diary keeping on behalf of the family.

Eventually, there were a total of 20 mothers who agreed to take part in the exploratory stage of this study, which comprised a semi-structured interview. Among these 20 participants, 11 of them volunteered to take part in the longitudinal stage. 10 of the mothers completed their participation over 6 months. One mother dropped out from the longitudinal stage after sending her first diary entry, as a result of a lack of time for the research commitment. She agreed to the use of the diary and interview content for this study. The details and characteristics of the participants are presented in Tables 4.2 and 4.3

respectively. In general, the participant mothers were in their 30s, held a Bachelor degree or higher (with one exception), had lived in the UK for more than 6 years and were the first generation to migrate to the UK and who came to study in the first place. Their countries of origin included China, Hong Kong, Malaysia and Taiwan.

Table 4.2: The details of research participants in this study

No.	Gender and age of child	Detailed longitudinal case studies	Diary	Mothers 'age group	Mother's origin	Father's origin	Language	Highest degree	Occupation	Years of living in the UK	Background reason for migrating to the UK	Residency
1	Girl, 4Y		x	30s	New Taipei City, Taiwan	Taipei, Taiwan	Mandarin	Masters	housewife / part-time in engineering	2 years	husband came to UK for PhD studies	temporary
2	Girl, 26M; Boy, 4M		x	20s	Liaoning, China	Liaoning, China	Mandarin	Masters	housewife	11 years	study (from A level)	settled
3	Boy, 4Y		x	30s	Baoding, China	Dundee, UK	Chinese, English	PhD	research fellow	12 years	study (from University)	settled
4	Girl, 6Y		x	20s	Fuzhou, China	Fuzhou, China	Mandarin	NVQ	accounting	9 years	look for jobs	settled
5	Girl, 5Y; Girl, 2Y3M		x	30s	Guangdong, China	Guangdong, China	Cantonese	Bachelor	housewife	7 years	husband came to UK for work	settled
6	Boy, 3.5Y		x	30s	Shandong, China	Fujian, China	Mandarin	Bachelor	piano teacher	4.5 years	husband came to UK for work	settled
7	Boy, 4.5Y		x	30s	Henan, China	Malaysia Chinese	Mandarin	Bachelor	housewife	7 years	husband came to UK for work	settled
8	Boy, 3.5Y; Boy, 1.5Y		x	30s	Kaoshung, Taiwan	London, UK	English, Mandarin	Masters (2)	business planning	18 years	study (from University)	settled
9	Girl, 2Y7M		x	30s	Hong Kong	Shanghai, China	Cantonese	Masters	consulting	7 years	study, husband settled in the UK	settled
10	Girl, 9Y; Girl, 7Y, Girl, 3.5Y		√	40s	Tainan, Taiwan	Taoyuan, Taiwan	Mandarin	Masters	housewife / part-time PhD student	13 years	study	settled
11	Girl, 11Y; Girl, 4Y	√	√	30s	Zhanghua, Taiwan	Taipei, Taiwan	Mandarin, Taiwanese	Masters	housewife / part-time editor	1 year	husband came to UK for work	temporary
12	Boy, 10Y, Girl, 3Y10M		√	40s	Taichung, Taiwan	London, UK	English / Mandarin	Masters	part-time work / housewife	12 years	study	settled
13	Girl, 6.5Y; Girl, 3.5Y		√	40s	Taipei, Taiwan	Germany, Portuguese	Mandarin	Masters (2)	Chinese teacher / home educator mum	16 years	study	settled
14	Boy, 5Y; Girl, 2M		√ (one entry)	30s	Henan, China	Beijing	Mandarin	Masters	investment Banking	15-20 years	study	settled
15	Girl, 3.5Y		√	30s	Taipei, Taiwan	Germany and Britain	Mandarin English	Masters	lecturer in University	10 years	work	settled
16	Girl, 4.5Y; Girl, 10M	√	√	30s	Kuching, Malaysia	Britain	English, Mandarin	Bachelor	tax manager	17 years	study and work	settled
17	Girl, 10M	√	√	30s	Guangdong, China	Isle of Man, UK	Mandarin, Cantonese	Postgraduate	finance	13 years	study	settled
18	Girl, 1Y2M		√	30s	Taichung, Taiwan	Oxford, UK	Mandarin	PhD	mum / full-time office manager	8 years	study	settled
19	Girl, 3Y7M		√	30s	Nei Mongol, China	Hong Kong	Mandarin	Masters	self-employed	10 years	study	settled
20	Boy, 3Y		√	30s	Taichung, Taiwan	London, UK	Mandarin, English	Masters	music teacher	10 years	study	settled

*All demographic details were provided by mothers

Table 4.3: The characteristics of research participants in this study

Characteristics	All participants		Longitudinal	
	n	% of participants	n	% of participants
Age group				
20-29	2	10	0	0
30-39	15	75	7	70
40-49	3	15	3	30
Country of origin				
China	9	45	2	20
Hong Kong	1	5	0	0
Malaysia	1	5	1	10
Taiwan	9	45	7	70
Spouse's ethnicity				
British	7	35	5	50
Chinese	11	55	3	30
European	1	5	1	10
British and European	1	5	1	10
Educational Level				
College	1	5	0	0
Bachelor	4	20	1	10
Postgraduate	15	75	9	90
Years of living in the UK				
0-5	3	15	1	10
6-10	8	40	4	40
11-15	5	25	2	20
16-20	4	20	3	30
Purpose of coming to the UK at the first place				
came with husband as dependent	5	25	1	10
study	13	65	8	80
work	1	5	1	10
look for jobs	1	5	0	0
Children (0-6Y)				
Male	8	32	1	9
Female	17	68	10	91

4.4.3 Interviews

Interviews were undertaken as a data collection method in this study. Interviews provide a valuable source of information for psychological studies, as insights can be gained into people's behaviour and, in particular, to find out how the interviewees understand their experiences and their worlds (Hayes, 2000). Seidman (2013) also wrote, 'At the root of in-depth interviewing is an interest in understanding the lived experience of other people and the meaning they make of that experience' (p.9). Furthermore, interviews are often applied in case studies and can serve as an auxiliary method in conjunction with other methods (Brinkmann & Kvale, 2015).

In the present study, interviews were conducted both in the exploratory stage and in the longitudinal stage of data collection. In the exploratory stage, a semi-structured interview was conducted with all of the participants. Semi-structured interviews incorporate open-ended and theoretically-driven questions and '[elicit] data grounded in the experience of the participant as well as data guided by existing construct in the particular discipline within which one is conducting research' (Galletta, 2013, p. 45). An interview script (Appendix 1) was designed to address the research foci of this study. The interview was divided into four parts, each addressing a different topic of inquiry. The first part explored the musical biographies of the participant mothers, which included their music-listening and music-learning experiences in their childhood and their current musical preferences. The second part explored the life-style of the family, in which the typical daily schedule and the language(s) spoken at home were examined, in order to contextualise the musical activities that took place in the family context. The third part focused on musical activities of young children, which included the musical resources available in the home environment and the nature of musical activities, both in the home and outside. The last part of the interview explored the participant mothers' perspectives on general parenting and musical parenting. With respect to musical parenting, their views on their children's musical activities and their expectation for their children's music learning in the future were examined. Overall, in the exploratory stage, these interrelated topics of inquiry help to gain an initial understanding of aspects of musical activities of young children of Chinese diaspora and potential influences from the parents, such as their musical backgrounds and their perspectives on music education.

In the longitudinal stage, two more interviews were conducted with the mothers at the middle and end of their researcher participation. These interviews focused on gaining greater insights into the emergent data from diary account and video recordings, including reports, observations and diary entries. Furthermore, in the final interview, all of the

participant longitudinal mothers were asked about their perceptions concerning the musical development of their child over the previous six months. The reason for this was to gain an alternative and complementary perspective on their young children's musical development, that is, from each mother's point of view.

4.4.4 Diary method

The diary method is a data collection approach in which the participants are required to keep notes about a particular event at appropriate intervals over a period of time (Hayes, 2000). The repeated recording of the events over time allows the researcher to 'explore issues of development, change or recurrent experience in a way which is very difficult using other research techniques' (p.147). The diary method is characterised by its link to a temporal framework, in which the record of information is in relation to the passage of time. The types of data collected with the diary method may include reports of actions, thoughts or feelings, as well as physical or social contexts. The advantage of the diary method is that the information gathered is temporally ordered. Diaries are now often used in combination with other methods, such as interviews to provide a more rounded picture, and as part of the process of triangulation (Breakwell, 2012). Breakwell (2012) suggested the use of the diary method in conjunction with other methods will reveal the range of discrepancies in self-records. Breakwell (2012) noted that the greatest advantage of the diary method is that it yields information which is temporally recorded. 'It tells you the sequence of events, giving you the profile of action, feelings, or thoughts across time (p.260). Besides, the familiarity of what a diary is to the participants and its cost-effectiveness are also regarded as strengths of the diary method.

Parental report was used in music education research when the children's musical activity in the home was a research focus and parents were thought to be the only people that could carry out the observation (e.g. Tafuri, 2008). Parents are asked to keep a regular written account that reported the musical activities at home and the musical behaviours of their children. For example, in Tafuri's (2008) longitudinal project, mothers were asked to compile a diary by answering questions regarding the musical activities carried out at home and the reaction of the children.

In the present study, the diary method was chosen for several reasons. One of the reasons was to gain temporal records over a sustained period of time, in order to trace the constancy and/or changes of young children's musical behaviours over time. Furthermore, a diary kept by the parents might gain a fruitful insight into young children's musical behaviours in their daily lives, which was sometimes difficult for a researcher to observe,

such as musical behaviours during the shower or at bedtime. However, the potential drawbacks of applying the diary method include, for example, the creation of hassle for the participants in their daily life, which might lead to a lower percentage of completion. In recognition of the convenience of email correspondence nowadays, the diary entries were required to be sent through email, although alternative options were also available if required by the participants, such as phone conversations (see sub-section 4.4.5). In order to increase the completion of the diary entries for a period of six months, the researcher sent email reminders to the participants if their entries were delayed. The researcher also provided immediate feedback on every diary entry or the provision of other sources (e.g. video recordings and photographs) sent by the participants, in order to maintain a frequent communication with the participants with a less possibility of dropping out from the study.

In the present study, a diary-keeping guideline for the participants to read and keep was developed (Appendix 2). With the provision of the guideline, the participants might gain a better knowledge of how to report relevant information for this study. In the guideline, the SoI-EY framework was introduced for the participants to ground the knowledge of the range of musical behaviours to be expected and might be observed on their child. Furthermore, a list of guiding questions was provided in the guideline, in order to improve the relevance of the information provided in their diary entries. The purpose of developing a guideline format, instead of a 'form' format, was to prevent the participants from limiting themselves in reporting musical behaviours of their child. For example, there might be other possibilities of musical behaviours or developmental patterns that were not addressed in the SoI-EY framework. The development of the guideline was to recognise the complex nature of young children's musical behaviours and development.

4.4.5 Data collection

As explained in sub-section 4.4.1, the data collection in this study comprised two stages – the exploratory stage and the longitudinal stage. The data collection procedures for each stage are explained below.

In the exploratory stage, each participant undertook a semi-structured interview with the researcher. Before the interview, the potential participants received an information sheet (see Appendix 3) in both hard copy and electronic version. The information sheet covered the purpose of the study, practical information about the parents' involvement, right of withdrawal, confidentiality and data protection policy. The potential participants were given enough time and opportunity to ask questions regarding their participation in the study. Those who were willing to take part in this study then signed a consent form (see Appendix 4)

to ensure that they fully understood the nature of their involvement in this study and consented to take part in the interview. The location of the interviews varied, depending on the participants' convenience. These places included their homes or cars, their work places, cafes, and a church. The length of the interview ranged from ten minutes to one hour.

At the end of the interview, all of the interviewees were invited by the researcher to further take part in the longitudinal stage of this study, which involved keeping a regular diary to report their observations on musical behaviours of their child for a period of six months, as well as participation in two more interviews. For those participants who expressed their interest in taking part in the longitudinal stage, they was a separate guideline for further details on how to keep a diary for this study (Appendix 2, also see 4.4.4). The participants were given enough time to ask questions regarding their longitudinal participation, before they agreed and signed a separate consent form for their participation (Appendix 5). The participants were also encouraged to provide relevant video recordings or photographs as supplementary documents, in addition to their diary entries. On the consent form for longitudinal participation, there was a separate ticked box for the participants to consent to the use of the visual information that they provided for the purpose of this study.

Eleven participant mothers agreed to take part in the longitudinal stage of this study. However, one of these participants dropped out of the study after her first diary entry, due to a lack of time for research commitment (also see Section 4.4.2). The other ten participants continued their participation for six months, with the provision of various numbers of diary entries via email, ranging from 4 entries to 24 entries. One participant mother expressed lack of time to note down the musical behaviours of her daughter. In this case, her report was completed through three separate phone conversations with the researcher. These phone conservations were typed down by the researcher and sent back to the mother for her confirmation, and these were counted as three diary entries. The diary entries were typed either in Chinese or in English, depending on the mother's preferences. In addition, among the ten participant mothers, eight of them provided a number of video recordings that captured the musical activities of their child[11].

4.4.6 The selection of cases

Stake (1995) wrote that the selection of cases should be the cases that 'maximi[s]e what we can learn…to lead us to understandings, to assertions, perhaps even to the modifying of generali[s]ations' (p.4). The selection of cases was initially based on the principle of

[11] Several video recordings were made during the interview with the mothers, as their children were engaged in musical activities when the interview was ongoing. These recordings were counted as part of data sources in analysing musical behaviours of young children.

reflecting the variety of the family's backgrounds in terms of the mother's country of origin. The regularity of diary provided by the mother was also considered. Consequently, four children from three families were selected for four individual case studies. The selection of the families reflected the variety of the mothers' countries of origin, as their home countries were China, Malaysia and Taiwan respectively. The children for case study analyses comprised two girls from individual families and one pair of sisters. Furthermore, they represented two age ranges of 4 years old and 10 month old, which might provide a further insight into young children's musical development at different ages through comparison of cases.

4.5 Data analysis

In the present study, data under analysis included the audio recordings of the interviews with the participant mothers, and diary accounts and video recordings provided by the participant mothers[12]. All of the audio and video recordings were transcribed into text by the researcher for further analyses. The video recordings were transcribed into separate vignettes, in which the nature of the musical activity and potential musical behaviours defined by the SoI-EY framework were described (see sub-section 5.4.1 for an example). Based on the transcription, as well as the diary accounts provided by the mothers, there were two foci of data analyses: a) The SoI-EY framework was applied as an assessment tool to examine the musical behaviour and development of the young children. Within each family who took part in the longitudinal stage, musical instances and the corresponding SoI-EY ratings were coded from the individual diary entries and the transcription of interviews and video recordings; b) Aspects of young children's socio-cultural musical environment were analysed based on a theoretical lens through the adapted ecological model (Figure 3.6), in which the potential socio-cultural musical environment that might play an influential role was examined. Furthermore, based on the systematic perspective, potential elements or patterns which emerged within or across systems that were not addressed by the adapted model (Figure 3.6) were also explored.

4.5.1 Multiple case study analysis

This investigation was carried out through a prime focus on four case studies, in which the detailed music-developmental pathways of each case study child and the complex features

[12] As explained in sub-section 4.4.5, these recordings also included the ones made by the researcher during the interviews, as on several occasions, the researcher had opportunities to meet the participant children and made the recordings.

of potential socio-cultural impact were analysed. The findings are compared by a cross-case analysis, in which any commonalities and diversity of and between individual cases are discussed, and these were grounded in the evidence generated from the other participants who took part in the longitudinal stage and exploratory stage. This analytic process sought to provide a comprehensive picture of musical development of young children of Chinese diaspora in London.

4.5.2 The SoI-EY coding procedure of musical behaviours

Examined through the SoI-EY framework, the units of individual musical instances were identified across all data sources, which included the interview transcription, diary text, video recordings (both provided by the mothers and filmed by the researcher) and field notes taken during the interview when the child was present. Within one musical instance, one or more musical behaviours were identified by the degree of close match with the descriptive headlines provided by the SoI-EY framework (see Figure 3.2). These headlines define the domain, level and element of musical behaviours. The musical behaviours within a musical instance were coded with one or more SoI-EY ratings. Each SoI-EY rating comprised a matrix of domain and level that contained one or more element(s). For example, a musical behaviour will be coded with 'R2A' when it matched the descriptive headline of 'respond to increasing variety of sounds'. A musical instance might be coded with more than one rating if multiple levels and/or domain of musical behaviours were identified. For example, a musical instance might be coded with two ratings of 'R5A and P5D' or 'R5B and R3B'. The former set demonstrates the ratings of multiple domains, and the latter set demonstrates the ratings of multiple levels. A musical behaviour that contains the ratings of various elements within a matrix of domain and level was counted as one rating. For example, a musical behaviour that matched the descriptive headlines of R5B and R5D was given a single rating of R5B,D, instead of two ratings of R5B and R5D, as they share the same matrix of R5. This coding strategy of not double-counting the same domain-level matrix with various elements as multiple ratings was to enable a focus on the frequency and developmental patterns in terms of domain and level, while the rating still demonstrates the variety of the elements within the musical behaviour. Table 4.4 gives the examples of the musical instances extracted from the data sources and the SoI-EY ratings.

Table 4.4: Examples of the musical instances and the corresponding SoI-EY ratings

Source	Musical instance	Comment	SoI-EY rating
Ellen&Betty Diary [1]	Betty reacts pleasantly when one of her musical toys started playing.	Betty responded to music with her facial expression.	R2A
Ellen&Betty Diary [5]	We went to the PROMs in the park. During a drumming performance, both girls started dancing around to the beat. They enjoyed the PROMS though not necessarily just the classical performance.	Ellen and Betty danced to musical beats.	R3B
Rina Diary [8]	She not only claps her hands when we are singing ' if you're happy and you know it clap your hands', also she tries to hold my hands to clap mine.	Rina showed recognition of the tune by making corresponding actions (clapping hands).	R4D
Ellen&Betty Diary [6]	Ellen loves dancing around when Strictly Come Dancing comes on the telly. We played at being the dancing judges and being the dancers.	Ellen danced to different songs playing on the TV programme.	R5A
Rina Diary [8]	Most of the time, she can confidently play the musical drum, bells, percussion, and xylophone herself. She just picks up the instruments and plays without anyone prompting her to.	Rina explored sounds with various percussion instruments.	P2A
Rina Video [10]	Rina was exploring her voice. She vocalised various syllables such as 'lei-uh' 'wah-wah' in the descending minor third of "♭G--♭E--", first as an interval, and then repeated glissando for another three times. Finally, she vocalised 'eh' in ascending pitches.	Rina vocalised sounds with patterned feature (a descending melodic contour).	P3C
Rina Diary [8]	She also sing to me the rhythms that are more recognisable than the random	Rina sang recognisable tunes.	P4A

	notes she was making before, like 'the wheels on the bus'.		
Lucy Diary [18]	Lucy often sings 3-5 songs repetitively, sometimes the English nursery rhymes, sometimes the Chinese children's songs, such as 'Butterfly' and 'The Little Donkey'.	Lucy could sing the whole songs and she had a singing repertoire.	P5A
Rina Diary [2]	I also notice she starts to hum some random noise when we listen to songs.	Rina vocalised when listening to the songs.	I2A
Lucy Interview [2]	One day, I found Lucy was… after Julie sang [Who Let The Dogs Bark] […] Lucy copied the 'woof woof' part, but she could not catch the off-beat syncopation precisely.	Lucy copied the 'rhythmic barking' from the song 'Who Let the Dogs Out', although the rhythm was not precisely copied.	I3B
Lucy Diary [10]	Sometimes there are adverts [on the radio] with those short and funny musical phrases. Lucy and Julie usually copied those musical phrases and got familiar with them.	Lucy copied short musical fragments from the radio jingles.	I4B
Lucy Diary [18]	Lucy usually sings [the nursery rhymes] with Julie. If one begins singing, the other will sing along.	Lucy and Julie sang songs together.	I5A

4.5.3 The analyses of music-developmental pathway

In order to visualise the musically-developmental pathway of the participant children, individual musical instance symbols were mapped onto a copy of the SoI-EY concentric figure, according to their SoI-EY ratings. Individual musical instances that contain one or more SoI-EY ratings were encoded with a circled number, such as ①, ②, ③ and so on. The increase in the number value represents the passage of time across the period of the research participation. This encoding system for identified musical instances allowed data analyses of music-developmental pathways. An orange line that links two number symbols (see next Chapter) represents the musical behaviours of multiple levels within the same domain identified within one musical instance. A green line that links two number symbols represents the multiple domains identified within one musical instance. A grey dashed curve

that links two number symbols represents two elements identified within the same matrix of domain and level. Two blue dashed curves that link three number symbols represent three elements identified within the same matrix of domain and level. The number symbols will visually demonstrate the distribution of the SoI-EY ratings over time, and different colours of the lines will further demonstrate the various patterns of musical behaviours in terms of multiple levels, domains and elements. This coding pattern is illustrated in Section 5.3.

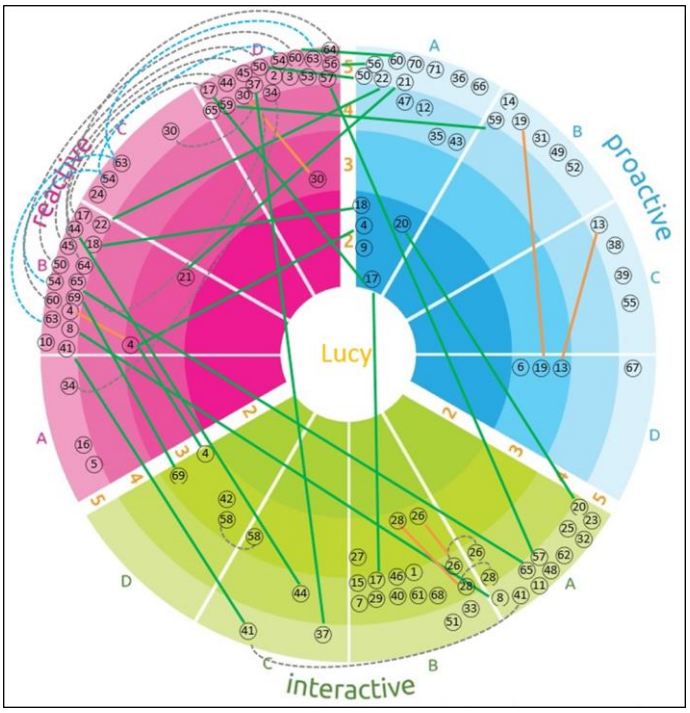

Figure 5.1: Lucy's music-developmental pathway profile (Aged 4Y3M - 4Y11M)

After the musical instances were identified and coded with the SoI-EY ratings, the frequencies of different combinations of domain and level were counted and presented in a table (see Table 4.5). This is followed by two pie charts that demonstrated the proportion of the SoI-EY ratings in terms of level and domain.

Table 4.5: A template table that demonstrates frequencies of each matrix of domain and level across the musical instances

	Reactive	Proactive	Interactive	Total
Level 2				
Level 3				
Level 4				
Level 5				
Total				

4.5.4 The analyses of musical development

In order to gain a comprehensive understanding of musical development of participant young children, different analytical perspectives were applied. These included the analyses of SoI-EY ratings in each domain over time, and the analyses of the mother's perception on musical development of their child. With respect to the analyses of SoI-EY ratings in each domain over time, there were three different analytical strategies (a, b, and c), as follows:

a. The frequency analyses:

In order to analyse the frequencies of different levels of musical behaviours over time, bubble charts were chosen as visual presentations of the information, created by the Microsoft Excel Software. According to the Microsoft Office Support, a bubble chart, which is a variation of a scatter plot, is used when there is an additional dimension of data value, and this value is presented in bubble size. In other words, three values of X, Y and Z are required for each bubble. In the present study, Values X, Y, Z represent the week, level and frequency of the musical behaviour within a domain. There are three bubble charts generated in each case, representing the frequency of the musical behaviours at different levels over the reported period in the Reactive, Proactive and Interactive domains respectively. The frequency of the SoI-EY level is represented by the size of the bubble and the number inside the bubble. The maximum value of the vertical axis in all of the bubble charts was set as Level 6 for the purpose of better visual presentation[13].

b. The variation analyses:

The variation analyses sought an understanding of variations of the average SoI-EY levels in individual weeks from one data point to another over the reported period. In each domain, the average SoI-EY level (mean score) in individual weeks was generated by the sum of the

[13] The round shape of the bubbles which are located at Level 5 is preserved.

levels divided by the number of the ratings. In order to analyse the variations of the average levels of musical behaviours over time, line charts were chosen as visual presentations of the information. There are three line charts generated in each case, representing the average level of the musical behaviours in individual weeks over the reported period in the Reactive, Proactive and Interactive domains respectively.

c. The correlation analysis:

The correlation analysis is performed to determine the bivariate relationship between two variables. Measures of correlation, as being referred to as correlation coefficients, 'give an indication of both the strength and direction of the relationship between the variables' (Robson & McCartan, 2016, p. 453). The strength of correlation is 'a way of saying how closely points on a scatterplot fall to a straight line' (Miles, 2012, p. 247). In the present study, the correlation analysis sought an understanding of the relationship between the variable of the child's SoI-EY level and the variable of time. The current study held an assumption that young children's musical abilities progress over a sustained period of time, although there are various contextual factors that contribute to such progression. This assumption is in accordance with the design of the SoI-EY framework, in which four levels (Level 2 to Level 5) of musical development had been identified sequentially from a large number of observations of young children. However, it is recognised that, in some cases, the observed SoI-EY levels may overlap or shift between levels within a single musical activity, as summarised by Voyajolu and Ockelford (2016), 'musical development is not necessarily a linear and clear-cut process'. Therefore, this study does not seek a perfect positive relationship (r=1.00). Instead, the direction of the relationship, which is visualised in the scatterplot and a trendline[14], is used to provide an indication of a general trend of young children's musical development over six months.

The scatterplots and the trendlines were generated by Microsoft Excel 2010. In each scatterplot, the X-axis represented the variable of time. Each unit in the X-axis represented the number of weeks since the beginning of the reported period. The Y-axis represented the variable of the child's SoI-EY level. Each unit in the Y-axis represents the average SoI-EY level in an individual week. There were three separate scatterplots generated in order to present musical development in the Reactive, Proactive and Interactive domains respectively. The correlation analysis was performed by SPSS Version 22.

[14] The trendline is the linear regression line that represents the best-fit line of all of the data points.

4.5.5 The analyses of socio-cultural musical environment of young children within the family context

Within each case study, aspects of young children's socio-cultural musical environment that were potentially influential in shaping their musical development were analysed through the lens of an adapted ecological model (Figure 3.6), which drew on current literature of young children's musical experiences within the family context through the lens of Ecological Systems Theory (Bronfenbrenner, 1979; 2005). Through this theoretical lens, aspects of each system from Micro- to Chronosystems and its interrelations were examined, in order to gain a systematic perspective on the socio-cultural musical environment of young children, which might be influential to their musical development. Furthermore, based on the systematic perspective, new elements in each system which were not addressed by current music education literature were also explored. The findings within each case were compared across the cases, as well as across the evidence generated from the other participant families, in order to gain an insightful understanding of young children's musical environment within the family context that might contribute to their musical development.

4.6 Ethical considerations

All of the participants in this study signed the informed consent forms (see 4.4.5, and Appendices 4 and 5), in which they were clearly informed of the right of withdrawal from the study and the confidentiality of data use for the purpose of this study only. Several ethnic issues were considered in this study. For example, in recognition of the heterogeneous nature of the Chinese population, which is reflected in the language and written script (e.g. Knowles, 2017), information sheets and consent forms in the languages of English, Simplified Chinese and Traditional Chinese were prepared to suit the parents' needs. However, the researcher was aware that some potential participant families had parents from both Chinese and British origins (in this study, all of the cases were Chinese mothers and British or European fathers). In order to prevent the fathers from potentially being excluded from learning about the study due to the Chinese version of the consent form, all of the mothers were first handed an English version of the consent form to sign. The researcher carefully made sure that all of the mothers understood and were comfortable with signing the consent form, except for one mother who requested a Simplified Chinese version, which was then provided immediately. In addition, as the involvement of young children was the nature of this study, the mothers might need to look after their child or be aware of their child's needs during the interview. On several occasions, the researcher halted the interview

for the mother to look after their child and ensure their well-being, before the interview continued. These ethical considerations were to ensure that the participants were comfortable in taking part in this study and to ensure no harm was caused due to their participation.

4.7 Validity of the study

In order to ensure the validity of the study, the researcher's judgement on SoI-EY ratings were validated by working with one of the authors of the SoI-EY framework. She was invited to code young children's musical behaviours in ten video recordings provided by the participants in this study. The consistency of the SoI-EY ratings between the researcher and the author were checked by the researcher. While there were two video recordings in which they had different opinions, eight video recordings were coded consistently with agreed opinions. Furthermore, examples of video recordings were shared with the researcher's supervisor as an additional validatory exercise.

4.8 Summary of the chapter

This chapter presented the methodology applied in this study. Case study approach was applied as a principle research approach in the present study, in order to address complex features of young children's musical development and the potential socio-cultural factors that contribute to their musical development. The fieldwork included two stages of data collection: twenty participant mothers took part in the exploratory stage of data collection, which involved a semi-structured interview that explored the musical biographies of the mothers, musical activities in the family context, and the mothers' expectation for their children's music learning in the future. Among these twenty mothers, ten agreed to participate in the longitudinal stage of this study, in which they were required to keep a regular diary over a period of six months to report musical behaviours of their young children. The mothers were encouraged to provide supplementary documents such as video recordings and photographs. Two more interviews were undertaken with these ten participant mothers, in order to gain a deeper insight into the diary account and video recordings provided by the mothers and to offer a developmental perspective on the SoI-EY coding. Subsequently, three families were chosen for detailed case study analyses, embracing four individual children, two younger and two older for comparative purposes. Data analyses included the coding of young children's musical behaviours according to the SoI-EY framework, the

mapping of their music-developmental pathways, and the different analytical perspectives on their musical development, including the analyses on SoI-EY levels over time and comments by the mothers on the musical development of their young children. The socio-cultural musical environment was examined through the lens of an adapted ecological model drawing on current literature on musical experiences of young children. Ethical considerations and the validity of this study were presented.

Chapter 5: Case Study Analyses: Lucy

5.1 Introduction

This chapter presents the first case study analyses that demonstrate the musical development of a child at four years old and how the family context as being part of Chinese diaspora in London might play a role in shaping her musical development. Data collection was undertaken between May 2014 and January 2015. The data sources under analyses included 24 diary entries written and sent through email by the mother, three interviews with the mother, and 29 video recordings and 1 audio recording provided by the mother as supplementary documents to the diary account and interviews. The diary was all typed in Traditional Chinese and the interviews were conducted in Mandarin. The diary account, interview transcription and video transcription that were translated into English by the researcher was underlined. In order to maintain the confidentiality of the participants, the child's name 'Lucy' is used as a pseudonym in this chapter.

This chapter is organised into the following sections: Section 5.2 provides the background information of the family and Lucy's musical experiences prior to the family's participation in this study. Section 5.3 presents the analyses of Lucy's musical pathway profile, which is illustrated with the concentric circle of the SoI-EY framework. Section 5.4 provides the examples of Lucy's musical behaviours conceptualised as SoI-EY domains of Reactive, Proactive and Interactive. Section 5.5 presents the longitudinal data of Lucy's musical development, in which Lucy's SoI-EY ratings in individual domains over a total of 37 weeks were analysed from different perspectives. In Section 5.6, how Lucy's musical development might be shaped by her family context was examined through the lens of Ecological Systems framework, in which the potential socio-cultural factors were conceptualised in Micro-, Meso-, Exo-, Macro-, and Chronosystem. The chapter is summarised in Section 5.7.

5.2 Background information of Lucy and her family

Lucy and her family had been living in London for just over one year when the family started participating in the present study. The family had moved to London as a result of the father's overseas assignment. They planned to stay in London for one more year before moving back and settling down in Taiwan. The demographic information of the parents and children is presented in Table 5.1. When it came to language, Mandarin was the main language

spoken at home, although Lucy's parents, Clare and Colin, would speak Minnan[15] to each other. Colin would also speak some English and Minnan to Lucy in order to improve Lucy's fluency in English and for Lucy not to forget the Taiwanese dialect. Clare also mentioned that she had been a school music teacher in Taiwan before they moved to the UK.

		Father	**Mother**
Name (pseudonym)		Colin	Clare
Origin	Region	Taipei city, Taiwan	Changhua city, Taiwan
	Language(s)	Mandarin, Minnan, English	Mandarin, Minnan
Age group		40-49	30-39
Highest degree		Bachelor	Masters
Current occupation		banking	house wife / textbook editor
		Children	
Name (pseudonym)		Julie	Lucy
Age		11	4
Gender		girl	girl
Schooling		Year 6	Nursery on weekday mornings

Table 5.1: The demographic information of Lucy's family (gathered on 19th May 2014)

In a typical day, as described by Clare, she spent time at nursery in the morning and would stay at home in the afternoon and evening. After having lunch at home, Lucy watched TV for half an hour or so, watching her preferred programmes such as Peppa Pig and Charlie and Lola from the children's channel 'CBeeBies'. In the afternoon, she would play games, sometimes with Clare, and sometimes on her own. After Julie came back from school around 3.30pm, the girls would play together, games such as role play, dancing or listening to music. After dinner, Julie sometimes watched her preferred TV programmes, such as 'The Boys' or 'Britain's Got Talent', and Lucy would watch along and hummed the simpler tunes. After Colin came back home around 8pm, they would watch videos of their preferences on YouTube together, sometimes dancing together along with music videos of Korean or Japanese pop songs. In addition, Lucy had a good friend, Chen, who also came from a Taiwanese family living in the same area. There were weekly playdates for Lucy and Chen to play together and for their mothers to catch up. On the weekend, the family went to

[15] Minnan is a dialect that is commonly spoken in Taiwan and Southern China. 'Minnan' means 'southern Fujian'.

Sunday service at a local church, in which Lucy learnt to sing the children's hymns. During the holiday, the family would go for day trips to other cities in the UK, such as Cambridge and Bristol, and they would listen to different types of music when spending time together on their car journeys.

In addition to the school education (Nursery and Reception), Lucy also went to weekly extra-curricular classes. In the middle of her research participation, Lucy started attending a tap-dance class at a local dance studio. Her interest in tap-dancing was inspired by her older sister, Julie, who attended the tap-dance class before her, as well as an episode from the Charlie and Lola TV programme, in which top-dancing was the theme. In the 30-minute session, Lucy learnt to tap-dance to the rhythmic feature of recorded piano music, and there was a teacher who gave instruction and demonstrations during the session. In the same dance studio, Lucy also attended the performing class which was right after the tap-dance class at the same studio[16], in which Lucy learnt to act and sing to the soundtracks of the musical 'Oliver!'.

With respect to cultural practices and beliefs, the family was immersed both in English culture and Chinese culture. As a result of the temporary nature of the family's settlement in the UK, the family intended to experience the English tradition and culture, such as having festive food at Christmas. Nevertheless, the family kept the Chinese culture by, for example, celebrating the Chinese New Year, emphasising the filial piety, and speaking Chinese languages. The family had a connection to Taiwan as their families would come to the UK to visit them. In their research participation period, for example, Clare's parents and brother came to visit the family for two months during the summer holiday, in which Clare noted the musical influences from Lucy's uncle. The relatives brought Taiwanese children's DVDs 'Yoyo Roll Call', to Lucy and Julie as gifts. When the relatives were not around, Lucy and Julie talked to their grandparents on the smart phone application Line every Sunday.

5.3 Analyses of Lucy's music-developmental pathway profile

Figure 5.1 demonstrates Lucy's music-developmental pathway at her age between 4Y3M and 4Y11M. There was a total of 71 musical instances identified across all data sources (see Appendix 6), in which 96 SoI-EY ratings were generated. In other words, there is an average of 1.4 SoI-EY rating within one musical instance. The individual musical instances were symbolised as ①, ②, …to ㉛ and mapped onto the SoI-EY framework (see Figure 5.1),

[16] The performing class was an one-hour session that started at the same time as the tap-dance class. As Lucy attended the tap-dance class, she only joined the second half of the performing class.

according to their SoI-EY ratings. Framed by the SoI-EY domains, levels and elements, there were various patterns of musical behaviours found within an individual musical instance. In addition to the musical behaviours in which only single domain, level and element were rated, the musical behaviours rated with multiple levels within the same domain were linked with orange lines. The musical behaviours rated with multiple domains were linked with green lines. The musical behaviours that demonstrated two and three elements within the same matrix of domain and level are linked with grey and blue dashed curves respectively.

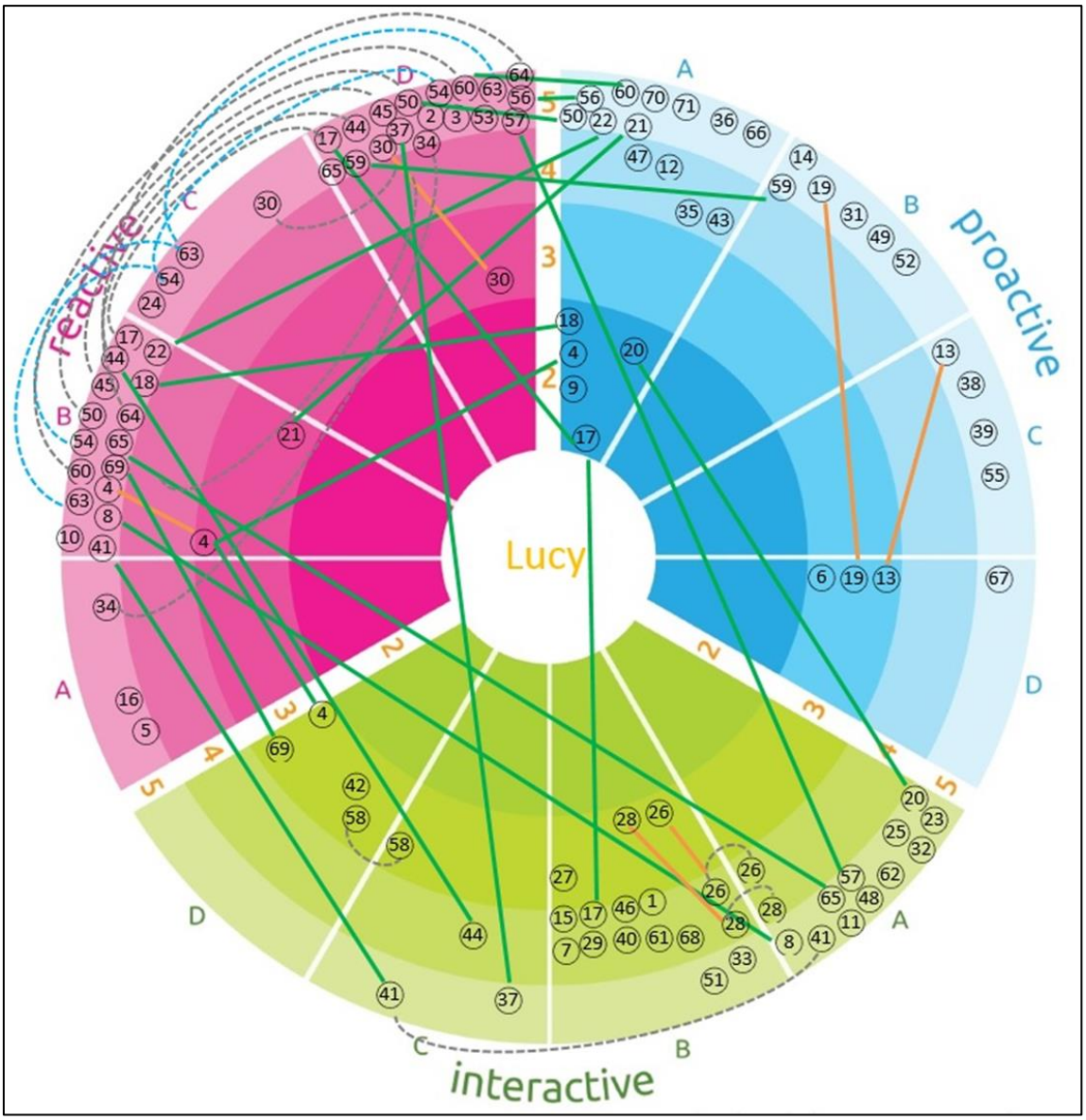

Figure 5.1: Lucy's music-developmental pathway profile (Aged 4Y3M - 4Y11M)

Figure 5.1 illustrates the distribution of Lucy's SoI-EY ratings and the complex patterns of her musical behaviours over 37 weeks. According to Figure 5.1, the most frequent SoI-EY rating determined by domain-level-element is 'R5D' – *associate pieces of music with memorable events or occasions*, which accounted for 17 times. Other frequent SoI-EY ratings included 'R5B' – *grasp simple musical structures* (16 times), 'I5A' – *sing or play pieces with others, sharing a part*' (11 times), and 'I4B' – *copy chunks of music that others sing or play* (11 times). When examining the relationship between elements within the same matrix of Domain and Level, a frequent SoI-EY rating of 'R5B,D' was found (7 times, plus 2 times of 'R5B,C,D') demonstrating that there were more musical instances of Lucy being reported not only to recognise simple musical structures, but also to associate the musical pieces with particular meanings.

In terms of the distribution of the domain-Level matrix without taking elements into account, Table 5.2 further displays the frequency of different combinations of domain and level. Table 5.2 demonstrates that, in general, Level 5 accounts for the highest frequency among of all of the three domains, which was almost exclusively occurring in the Reactive domain but shared similar frequencies with the other levels in the Interactive domain. Lucy's musical behaviours at Levels 3 and 4 mainly occurred in the Interactive domain compared with the other two domains. Level 2 musical behaviours only occurred in the Proactive domain but not in the Reactive and Proactive domains. Based on Table 5.2, Figure 5.2a and 5.2b summarise the percentages of SoI-EY ratings based on level and domain respectively. Figure 5.2a shows that, more than 6 in 10 SoI-EY ratings were at Level 5, and the frequencies decrease as the level goes lower. Figure 5.2b demonstrates that, the frequencies of the SoI-EY domains shared evenly in general, with the Interactive domain slightly higher than the other two domains. These distributions reflect the domains and levels of musical behaviours perceived and reported by the mother in the diary and interviews as well as observed in the supplementary video/audio recordings.

Table 5.2: The frequency of different matrices of domain and level across Lucy's 71 musical instances

	Reactive	Proactive	Interactive	Total
Level 2	0	5	0	5
Level 3	3	3	7	13
Level 4	0	4	12	16
Level 5	28	20	14	62
Total	31	32	33	96

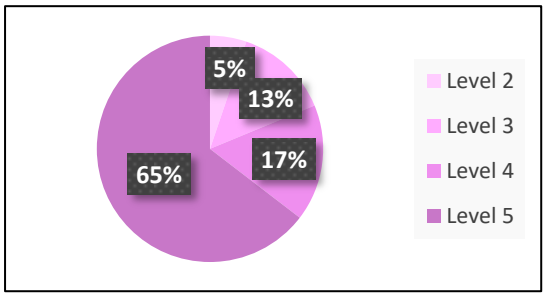

Figure 5.2a: Percentages of Lucy's musical behaviours by level

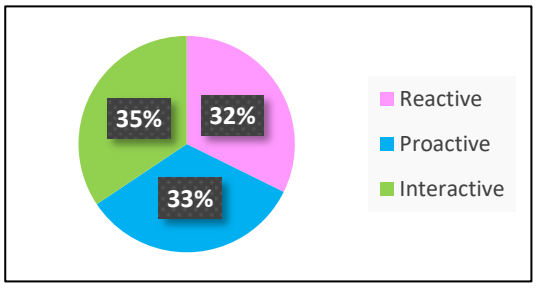

Figure 5.2b: Percentages of Lucy's musical behaviours by domain

Figure 5.1 also demonstrated the various patterns of musical behaviours. There were musical instances that were rated with multiple levels within the same domain (linked with orange lines). These included musical behaviours at Levels 3 and 5 in the Reactive (2 times) and Proactive (2 times) domains, and musical behaviours at Levels 3 and 4 in the Interactive domain (2 times). There were musical instances that were rated with multiple domains (linked with green lines). These included Reactive + Proactive (7 times), Reactive + Interactive (7 times), Proactive + Interactive (1 time), and Reactive + Proactive + Interactive (2 times). The patterns of musical behaviours in the multiple domains demonstrated that there were more musical instances of responding to music while making sounds/music alone or with others, compared with the musical instances that involved making sounds/music alone as well as with others at the same time.

The following sections will provide examples of Lucy's musical behaviours at various levels based on SoI-EY Reactive, Proactive and Interactive domains.

5.4 Examples of Lucy's musical behaviours

5.4.1 Reactive musical behaviours

Lucy's reactive musical behaviour was predominant at Level 5, which represented her musical abilities to recognise and respond to whole pieces of music in the aspects of musical structures, features and the associated meanings. Lucy was exposed to a range of sounds and music that stimulated her musical responses, such as music playing from the electronic musical toy and music from the DVDs and YouTube that came with images and music sung

by herself. Lucy responded to music in various ways, including free bodily movement, dancing steps learnt from the music videos, imaginative play, and verbal comments on music.

Lucy's recognition and responses to simple structures of musical pieces were demonstrated in her free bodily movement. The following example demonstrated her recognition of simple musical structures such as chorus and ending parts when dancing to digital music with her friend:

> *Lucy was sitting on the top of sofa while moving her arms to the digital music of 'Jingle Bell'. She pointed to the camera when the music was about to finish. Clare said, 'Alright, Chen, choose [the next piece of] music!' Chen ran to the electronic keyboard toy and pressed a button, while saying ' I want Christmas!' The digital music 'Jingle Bell' started playing, and Lucy and Chen started dancing. They danced freely but their movement was generally synchronised to the beats of the song. When it came to chorus, Lucy went on the sofa to dance. When the music was about to finish, Lucy pointed to the camera as her ending pose.* (Lucy Video [1]-1, ⑩ – R5B)

Lucy's recognition of and responses to musical structures were also shown as she was reported to perform the corresponding dancing steps or hand gestures along with the songs. In the following example, she was doing the hand gestures while singing a nursery rhyme:

> *Lucy was singing the whole piece of Baa Baa Black Sheep with hand gestures, such as clapping hands along with 'baa baa', doing the hand gesture of 'three' along with 'three bags fall'.* (Lucy Video [18], ⑩– R5B,D & P5A) (Figure 5.3)

Figure 5.3: Lucy was doing hand gestures when singing 'Baa Baa Black Sheep' (Lucy video [18])

Lucy's musical responses were embedded in a social context that enabled her to learn the social and cultural meanings of music and she also associated pieces of music with particular meanings. She danced in particular styles which she learnt from the music videos

of popular songs on YouTube or children's DVDs. Furthermore, in the Christmas nativity events held at school, she learnt the Christmas-associated songs and danced particular steps with a group of children. The following musical instances demonstrated Lucy's musical responses that were socially and culturally embedded:

> *Like Gangnam Style, it is very familiar [to Lucy], three of them would dance at home all day long. They can watch it from YouTube. She knows how to dance.* (Lucy Interview [1], ② – R5D)

> *[Lucy] spent a lot of time at home during the summer holiday. The Yoyo series that we brought from Taiwan has been her favourite at all times. We have six volumes, and they choose different volumes to dance, depending on their mood. Her not-too-fluent dance was filmed by me.* (Lucy Diary [12], ㉞ – R5A,D) (Figures 5.4a and 5.4b[17])

> *Zoyi and Yoni's Korean hemlet dancing was very popular some time ago, so they played the roles of Zoni and Yoni respectively and started to dance. They have practised twice, and the one filmed was their third time.* (Lucy Diary [16], ㊺ – R5D) (Figures 5.5a and 5.5b)

> *This is the school's nativity show before Christmas holiday. It was hilarious to see Lucy wearing brown and performing a donkey dance. She practised at school every day, so she is very familiar with it. She also usually danced in front of us at home.* (Lucy Diary [24], ㊹ – R5B,D) (Figure 5.6)

Figure 5.4a: Lucy was imitating the dancing steps from the Yoyo Roll Call DVD (Lucy Video [12])

Figure 5.4b: The song from Yoyo Roll Call DVD that Lucy was watching and imitating (YOYOTV, 2013)

[17] Figure 5.4b is a screen capture from the video available on YOYOTV YouTube Channel.

Figure 5.5a: Lucy and Chen were imitating the dancing steps of Zoni and Yoni's video 'Bar Bar Bar' (Lucy Video [16])

Figure 5.5b: Zoni and Yoni's music video 'Bar Bar Bar' published on YouTube (ZoniYony 左左右右, 2014)

Figure 5.6: Lucy was performing donkey dance along with a Christmas song at her nativity at school (Lucy Video [24]-7)

Lucy performed imaginative drama along with musical pieces. She responded to music through her expressive performances, such as acting the scene of the story or imitating the character along to recorded music or her own singing. Although the performances were inspired by the stories that were socially-known in Lucy's located musical environment, such as the Disney film Frozen or the English musical 'Oliver!', Lucy might integrate her own interpretation of music and expressiveness through her drama performances:

> *In this video, she used her coat as a cloak, imitating the character of the film who threw her cloak to the sky. Through the performing class, she seems to enjoy self-directing.* (Lucy Diary [24], ㊿ – R5B,D; P5A) (Figures 5.7a and 5.7b)

> *This session [of the performing class] is the musical 'Oliver!'. The music is to describe the main character who was asking for more food. It is dramatic. The teacher took out*

the objects for them to perform, and taught them to do appropriate facial expression. (Lucy Diary [20], ㊿ – R5C,D) (Figure 5.8)

Figure 5.7a: Lucy was imitating Princess Elsa while singing 'Let it Go' (Lucy Video [24]-1)

Figure 5.7b: Princess Elsa, the character of 'Frozen' film that Lucy was imitating (DisneyUK, 2014)

Figure 5.8: Lucy was performing the scene when the soundtrack of the musical 'Oliver!' was playing. (Lucy Video [20])

Furthermore, Lucy created narratives in her made-up singing, as reported by the mother in the diary:

Lucy tends to add narratives into her made-up singing. Although [the scene] is not logical to adults, but she has this tendency. […] Her ability to invent songs is getting better. She sometimes adds new elements into the songs that she learnt from school, making it several musical fragments with narratives. (Lucy Diary [20], ㊾– P5C)

In addition, Lucy's Reactive musical behaviours at Level 3 occurred in contexts in which the musical behaviours at multiple levels or in multiple domains were found. For example, it was reported in the diary that Lucy, on a car journey with the family, was able to identify a number of princess stories by distinguishing different singing voices, tunes or the diatonic system, which showed her capability of responding to music at Levels 3 and 5:

> *[…] she kept asking which princess sang the songs? Is it Cinderella and little mouse? [...] Eventually, she had her own way of distinguishing, by catching the lyrics to match the story, for example, or by the tune or the voice characteristics of the characters (for example, the voice of Potacontas is bolder, Belle of Beauty and the Beast is sweeter, the tune of Mulan sounds like a Chinese scale.)* (Lucy Diary [10], ㉚ – R3D; R5CD)

In another instance, Lucy was reported to respond to beats of a rhyme by nodding her head while reading a Chinese rhyme (see 5.4.2 for this instance). The above examples of Lucy's musical behaviours in the Reactive domain demonstrated a variety of Lucy's musical understanding and responses, ranging from the qualities of music (e.g. sounds, beats and musical structures) to the meanings that were socially and culturally constructed. These musical responses demonstrated Lucy's enculturation into her musical world, in which she experienced music from local English culture, popular culture and the cultures created by children's industries, such as Disney films. The audio-visual media that were available to Lucy, as well as the extra-curricular classes that she attended, seemed to play a significant role not only in extending Lucy's musical experiences but also in transmitting or establishing the musical cultures. Furthermore, the exposure to music with narratives stimulated Lucy to perform singing with her own expressiveness and even create narratives along with her made-up songs. Lucy's musical ability to create imagination in music as abstract 'narrative in sounds' potentially matched Level 6 musical behaviours in the original SoI framework.

5.4.2 Proactive musical behaviours

Lucy's proactive musical behaviours were concentrated around Level 5, representing her musical ability to sing or play whole musical pieces. There were also occasional instances of lower levels spanning from Levels 2 to 4, most of which took place when she was chanting, singing made-up music or making music in various forms, such as tap-dancing and operating media. Her musical ability to sing and make music also demonstrate the output of her musical understanding, which reflected a variety of musical types to which Lucy was exposed, ranging from English nursery rhymes to contemporary Chinese children's songs.

Lucy was reported to be capable of singing whole songs. She sang familiar songs as well as made-up songs. Her singing repertoire, as reported by the mother and observed in the

videos, included the theme songs of the Disney film ‘Frozen’, the English nursery rhymes (e.g. ‘Twinkle Twinkle Little Star’, Baa Baa Black Sheep’ and ‘One Two Three Four Five’), children’s hymns (e.g. The Lion’s Roars) and Chinese children’s songs. There were also instances in which Lucy hummed short tunes instead of singing the whole piece, such as humming the tune of Frozen songs before sleep, or humming the tune from the Yoyo DVD when taking a stroll, as reported in the diary. These instances, although rated Level 4, showed her singing tendency that was shaped by the situation, as she might tend to hum the short tunes rather than sing the whole piece when singing was accompanying other activities.

Lucy also altered the musical elements of the familiar songs, such as replacing the lyrics with invented ones and making up the melodies. It was reported that she would invent the lyrics when she forgot them:

> *When Julie is not around, she would fill in the invented lyrics if she forgot the lyrics, so that the song can be sung smoothly. Sometimes, in order to react to the current situation, she would integrate her life experiences into her [invented] lyrics.* (Lucy Diary [18], ㊾ – P5B)

The above comment demonstrated Lucy’s abilities and the motivation to sing a whole song. However, her intention, whether it was to fill in the forgotten lyrics, as perceived by Clare, or to actively use the familiar tunes to articulate her life experiences, was unclear. The lyric-inventing activity has the possibility of creating different rhythms (such as the number of the syllables) which still fitted into the original tune. Furthermore, Lucy improvised melodies that fitted into her familiar songs, which was seen in a video clip made when she was having a shower (Lucy Video [3] -⑭ – P5B). The transcribed notation was presented in Figure 5.9. In Figure 5.9, the song was composed of the theme tune of ‘First Time in Forever’ (highlighted in grey rectangles), which was sung repetitively throughout the song, with invented phrases in between, which also showed the patterns of repetition and variation. The whole song production was generally fitted into the Western diatonic system, although the key switched between D Major (bar 3 to bar 12) and E♭ Major (bar 1 to bar 2 and bar 13 to bar 19). Furthermore, the expressive qualities of Lucy’s singing were also captured in the video, which was marked with accents on some of the notes.

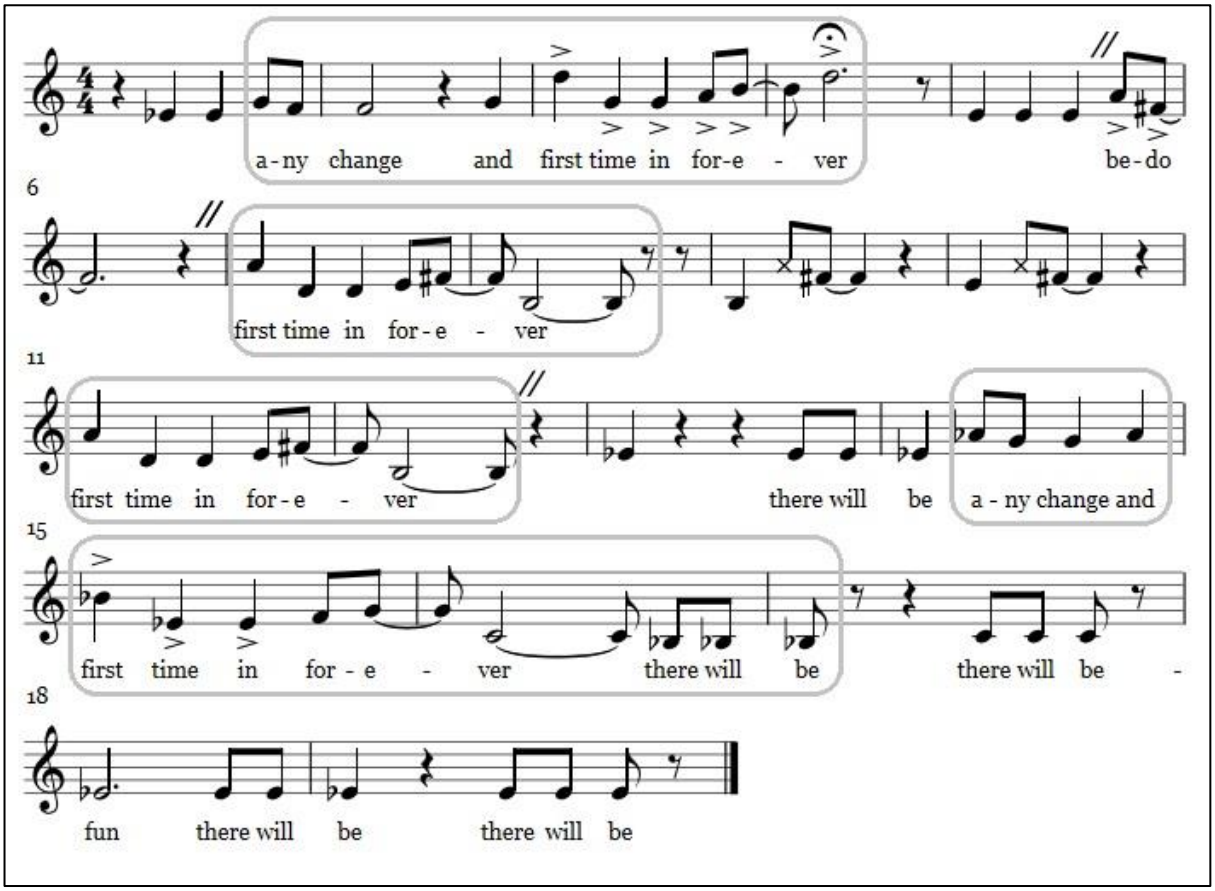

Figure 5.9: The notation of Lucy's singing during her shower (Lucy Video [3])

Clare further described the variety of Lucy's improvisation when she 'forgot how to sing the song', in which she found that in Lucy's perception, the rhythmic features seemed to be the most salient element that framed a song:

> *[…] Old McDonald Had a Farm, for example. When she cannot remember the lyrics well, she would replace the lyrics by the words she already knew or her experience (in other words, she sings random lyrics!), such as changing the animals randomly, creating her own animal sounds. There is also an interesting phenomenon: With the songs that she is more familiar with: tune+rhythm+lyrics; not familiar enough: tune+rhythm+invented lyrics; the least familiar: keep the original rhythm but invent the others randomly.* (Lucy Diary [5], ⑲–P5B&P3D)

Lucy was also reported to sing made-up songs. The reported made-up songs all came with lyrics, which were derived from her life experiences and imaginative story scenes:

As Lucy's school starts next Wednesday, she often discussed about her good friend Daisy […] Therefore, she often makes up songs with the lyrics of 'oops a daisy'. When she saw me secretly observing and asking her which song she was singing, she would say with embarrassment, 'It's not a song! It's randomly made up by myself!' (Lucy Diary [14], ㊳ – P5C)

She sings made-up songs during shower. I asked her 'what are you singing?' She said 'I am singing a princess song made up by myself.' When I asked her why there were sounds of tongue-clicking, she said, 'it is the princess knocking the door. She is going to visit me.' (Lucy Diary [2], ⑬ – P5C&P3D)

The above instance revealed Lucy's conception of what a 'song' would be like, as Lucy herself was aware that she was making it up and did not regard it as a 'proper' song. An awareness of the socially-accepted and conventional songs can be seen in the above example. Furthermore, the above examples demonstrated the narrative aspect in Lucy's made-up songs, which was also exemplified in other musical instances (Section 5.4.1). In other words, Lucy's made-up singing carried narrative features that demonstrated her unique expressiveness and imagination.

In addition to singing, chanting was another music-making form in Lucy's Proactive musical behaviour. Lucy's chanting repertoire included Chinese children's chants (e.g. Little Mouse) and English nursery chants (e.g. One, Two, Buckle my Shoe). When chanting, Lucy was able to read the words rhythmically with a structure of different rhythmic phrases, and these instances were rated at Level 5:

Recently, [Lucy] likes chanting. The short Chinese chants in rhyme, for instance. The chants as long as Little Mouse[18] can be remembered clearly, but she would mix up the beginning and the end if the length is too long. She likes nodding her head [to the beats] while chanting. (Lucy Diary [6], ㉑– R3B&P5A) (Figure 5.10)

[18] Little Mouse (Xiao Lao Shu) is a traditional Chinese children's chant. The content is about a little mouse that climbs up to the oil lamp to steal oil to eat. However, the little mouse cannot find the way to go down and finally it rolls all the way down.

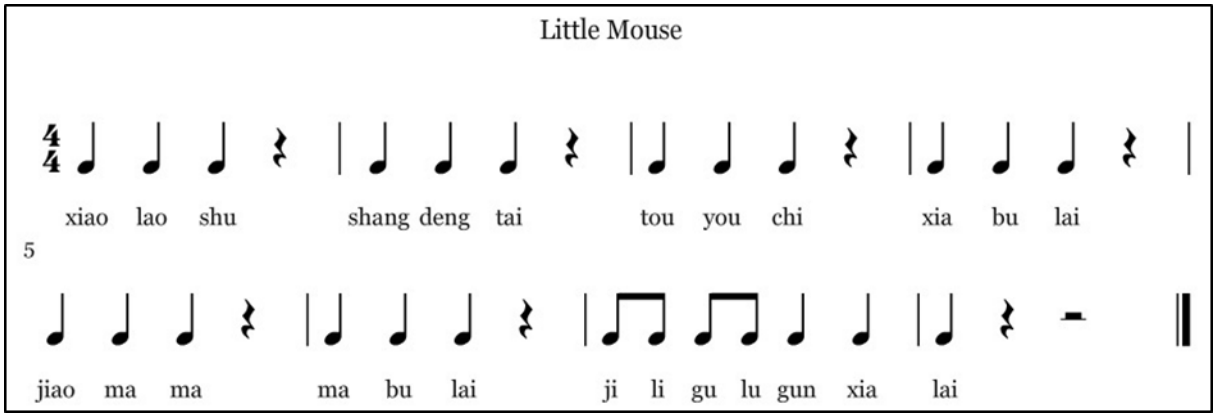

Figure 5.10: The rhythmic structure of the chant 'Little Mouse'

It is worth noting that the rhythmic feature of the chanting seemed to encourage bodily movement to the beats, as demonstrated in the above example. Clare further commented that the bodily movement, such as nodding the head, seemed to help the rhythm of the chant to be more steady (Lucy Interview [2]).

Lucy's music-making behaviour also included the controlling of media, which was rated as Proactive Level 2. The media available for Lucy to operate in the home environment included a CD player, an electronic keyboard toy, and the TV on which she could play the Yoyo DVDs and recorded children's programmes from the iPlayer. In particular, the function of the electronic keyboard toy created the opportunity for Lucy not only to dance along to its pre-recorded music, as reported earlier, but it also allowed Lucy to control the sound quality, such as volume and speed.

> *This second-hand electronic keyboard toy is Lucy's favourite…that she can control the volume and speed by herself seems to satisfy a 4-year-old's desire to control music.* (Lucy Diary [1], ⑨ – P2A)

Lucy's control of media had a strong connection with her tendency to dance, which was reported frequently in the diary:

> *She really likes listening to the songs [from the Yoyo DVD]. She would play the CD by herself and dance.* (Lucy Diary [4], ⑰ – R5B,D&P2A&I4B)

In the corresponding Video clip, Lucy not only danced to the song, she also sang a few notes along with the song (see Section 5.4.3 for the transcribed notation). This musical instance, therefore, contained all of the three SoI-EY domains, as she played music (Proactive), danced to music (Reactive) and sang along to music (Interactive).

A special form of Lucy's music-making reported in the diary was tap-dancing. Tap-dancing is a musical performance that combines dancing with rhythmic sound-making by feet tapping on the floor. Lucy was reported to attend a tap-dance class, and her learning of the rhythmic tap-dancing was mostly in the context of imitating the teacher, which was regarded as Interactive musical behaviour (see Section 5.4.3 for the example). Nevertheless, Lucy was reported to show the rhythmic dancing steps at home (Lucy Diary [17], ㊼ – P4A), which demonstrated a developmental pathway from imitation (Interactive) to music-making on her own (Proactive).

Overall, Lucy's proactive behaviours showed a complexity in her singing and music-making activities. These also reflected her wide range of song repertoire, such as traditional and contemporary Chinese children songs, English nursery rhymes, Disney princess songs and the songs learnt from her church. The imaginative and expressive qualities were found in Lucy's musical production, in addition to her ability to sing in tune and in time that were defined by her musical culture.

5.4.3 Interactive musical behaviours

Lucy's interactive musical behaviours spanned from Level 3 to Level 5, with predominance on upper levels of 4 and 5, indicating that there were more reported musical instances that involved using fragments of music or the whole musical pieces in musical interactions. The forms of musical interactions included singing and rhythm making, which occurred in the contexts from dyadic interactions to group activities. In addition to music-making with other people, media also played a part in Lucy's experiences of musical interaction, as she copied and sang along to the songs played on the media.

Lucy was reported to sing songs with others. In the home environment, Lucy usually sang with Julie or Clare. During singing, they might share the same part or hold different parts:

> *Lucy's English level is better and better, and suddenly she can sing many nursery rhythms completely. She usually sings with Julie. As long as one of them starts singing, the other will join in.* (Lucy Diary [18], ㊽ – I5A)

> *This is a children's hymn that we sing at church […]. The lyrics have turn-taking parts where we need to sing different parts, although singing alone is also fine. Additionally, the lyrics contain a variety of animal actions and sounds, and there is a turn-taking 'I love you' part in the chorus, with high and low volumes designed in this song, so I often like to sing with Lucy.* (Lucy Diary [19], ㊶ – I5B)

When singing with Julie, Clare recognised the supporting role that Julie played, as Lucy would pick up the missing lyrics more easily and improved her sense of achievement (Lucy Diary [18], also see Section 5.6.2). In other words, for the songs that Lucy was not familiar with, she was more likely to complete the whole song when singing with Julie. Another example also demonstrated the completion of a song when singing with her school friend, compared with singing on her own:

> *The teacher taught new nursery rhymes. One of them was about a bear, which she often sings a lot. […]Sometimes singing it during her shower, sometimes singing it when playing the toys, but most of the time she only remembered the chorus part.* (Lucy Diary [15], ㊸ – P4A)

> *Not until the day when she went home with her school friend, they complemented the song together. They did the actions along with singing, and their actions synchronised in the chorus part, just like two bears dancing together.* (Lucy Diary [15], ㊹ – R5B,D&I4C)

The above examples revealed the significant roles played by the peer and sibling in Lucy's singing experiences. They seemed to advance Lucy's musical behaviours in addition to making it a positive experience in Lucy's life. Furthermore, the example above suggested that Lucy's 'zone of proximal development' lay in Levels 4 and 5, and that her peer played the role of an advanced person who supported Lucy's musical development (see Section 8.2.5).

The musical interaction in singing also took place as an appendant of social interaction. For instance, Lucy was reported to play an 'attacking game' with Julie and their uncle who came from Taiwan to visit them. In the game, they 'attacked' each other by copying each other's singing tune and inventing new lyrics to tease each other:

> *I have mentioned before that Lucy is familiar with Let it Go [see Figure 5.11], so the sisters used this song to 'counterattack' [to the uncle when he invented lyrics to make fun of the girls]. The uncle's name is 'Rei Jie', with nickname 'Rei Rei', and the lyrics of the tune became 'Rei Rei go, Rei Rei go, Rei Rei zui ai wa bi kong'*[19] *. If one person begins, the other person would counterattack by using the same rhythm and tune.* (Lucy Diary [9], ㉖ – I3B&I4A,B)

[19] 'Rei Rei zui ai wa bi kong' means 'Rei Rei likes most picking the nose'.

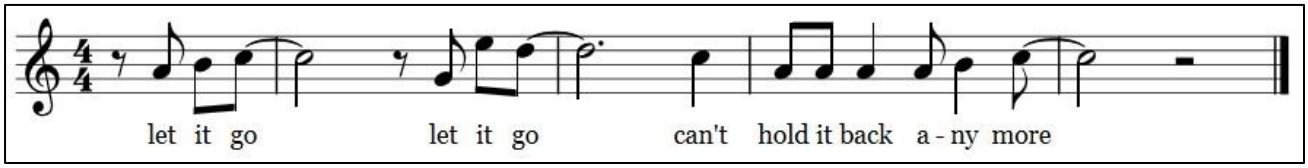

Figure 5.11: The theme tune of 'Let it Go'

In this example, Lucy not only copied the musical fragments of the theme tune as a result of familiarity (Level 4), but she also found Chinese words to keep the lyrics in rhyme. It was revealed that the in-rhyme word searching was also a musical game of sound copying (Level 3), and the consonant sounds of the language became the mediator. Although the invented lyrics seemed to serve the main role in entertainment, the imitation of the tune was also an essential element of the game. This example demonstrated the possibility of musical interaction that served social purposes.

Lucy was reported to be engaged in group singing activities. These activities usually occurred in an adult-led context, in which a teacher demonstrated or guided singing to a group of children. For example, in the nativity show at school, Lucy was singing *It was on a Starry Night* with other children, which was demonstrated in a video clip (Figure 5.12) (Lucy Video [24]-6, ㊺ – R5B,D&I5A). Clare further commented that Lucy was familiar with the song as a result of daily practice at school (Lucy Diary [24]). Furthermore, in the performing class which Lucy attended once a week, Lucy learnt to sing Where is Love with other children (Figure 5.13).

Figure 5.12: Lucy's group singing activity at school (Lucy Video [24]-6)

Figure 5.13: Lucy's group singing activity in the performing class (Lucy Video [24]-3)

In addition to singing with other people, Lucy also copied the tunes that played on the media, such as the CDs or YouTube. For example, in a video clip, in which Lucy was dancing to the song Yoyo Loves the World that was playing from the CD player, she also sang along with a few words while dancing (Lucy Diary [4], ⓱ – R5B,D&P2A&I4B). The notation of the tune was transcribed and shown in Figure 5.14, and the notes that Lucy sang along were marked in grey rectangles. It seemed that Lucy tended to copy the parts with simple rhythm and lyrics (e.g. 'yo yo'), compared with the longer and faster notes, as well as the end part of the musical phrase (e.g. 'de xin' and 'everybody').

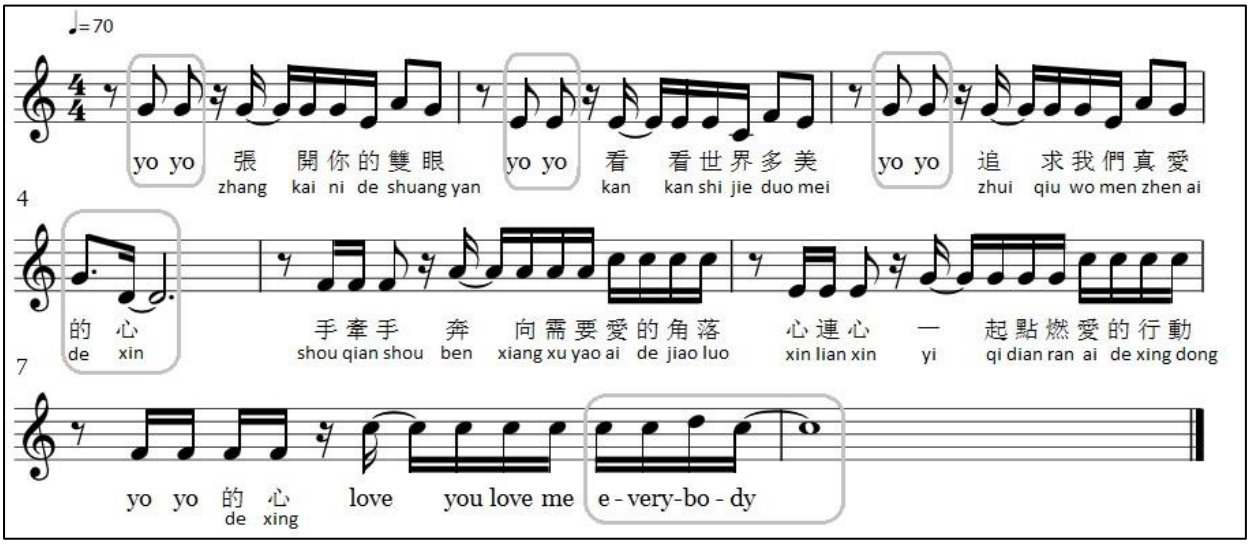

Figure 5.14: Lucy copied a few words (in grey rectangles) while dancing to the chorus part of Yoyo Loves the World (Lucy Video [4]) (YOYOTV, 2014)

It was also reported that when watching a music video on YouTube, Lucy tended to repeat the short musical fragment that was repetitive and easy to pick up:

> *She only picked up 'Just the Show, Just the Show…' She can't catch all the lyrics, only picking up the repetitive end of the song, [SING] 'give my money back, give my money back', [SPEAK] give my money back, she only knew this [tune].* (Lucy Interview [2], ㊵ – I4B) (Figure 5.15)

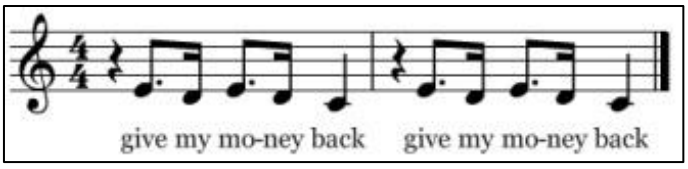

Figure 5.15: The musical fragments sung by Lucy

The above examples of singing with others or along with the recorded music above revealed different repertoire and levels of musical behaviours depending on the context. In a family environment, she enjoyed singing with a musical partner, such as her sibling or the mother, and playing musical games with family members; while in adult-led group activities, such as the school nativity show or the performing class, there were opportunities to learn and sing complete songs in a group. When listening to music through the media, Lucy would copy the lyrics with a simpler rhythm or repetitive feature, sometimes accompanied by dancing.

Chanting was another musical activity that Lucy did with Julie. It was reported that the sisters recreated a chant from the CBeebies Channel and Lucy, with the recognition of the whole chant, took the easier line of 'It's Charlie, it's Charlie' of the chant (Lucy Diary [11], 33 – I5B). The audio transcription of the chant in Figure 5.16 showed the repetitive rhythms of the chant that Lucy and Julie were engaged with. It seemed that although Lucy's line contained a simple rhythmic pattern, her chanting fitted into the whole rhythmic structure of the chant. This is a form of antiphoning (turn-taking) with another to create a piece with separate elements.

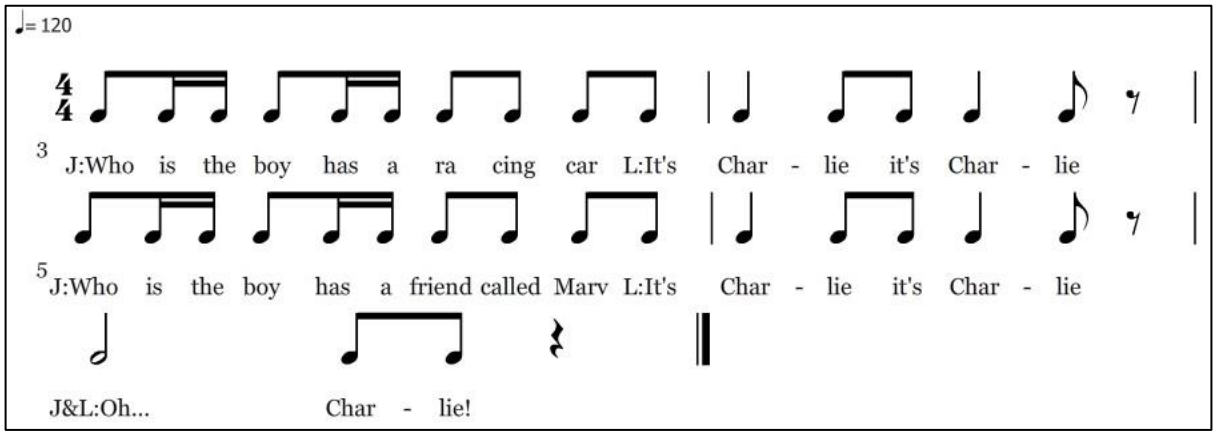

Figure 5.16: The chant from the programme Charlie and Lola (Lucy Audio Transcription [11])

Lucy was also engaged with rhythmic activities in her musical interaction with others. She copied the rhythms that were made by Julie or Clare by clapping her hands. In one instance, Lucy was reported to pick up the rhythm of what Julie was playing on the piano:

> *When Julie was playing Beyer's [SING] Do Sol Sol Sol Fa Mi Re Do [Figure 5.17a], Lucy was beside her, and she would intentionally do this [CLAP THE RHYTHM ON Figure*

5.17b]. She clapped the same rhythm no matter what Julie was playing, which made Julie mad. (Lucy Interview [3], ㊽ – I4B)

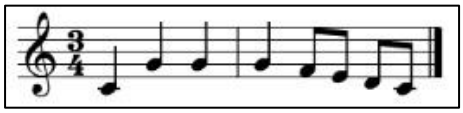

Figure 5.17a: The musical fragment played by Julie

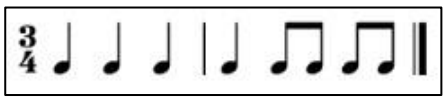

Figure 5.17b: The rhythm clapped by Lucy

In another instance, Lucy was reported to have made up a short rhythmic clapping game with Clare, in which both of them took the initiative for the other to copy. In the video clip, Lucy and Clare were sitting side by side in a restaurant and had just started discussing how to play the clapping game:

Clare: You copy or I copy?

Lucy: Me...

Clare: Alright I go first.

Lucy: Me, me and then you.

Clare: Alright. Let's start.

Lucy: [CLAP THE  *RHYTHM]*

Clare: [COPY THE RHYTHM]

Lucy: [TOUCH THE MOTHER] Your turn.

Clare: [CLAP THE  *RHYTHM]*

Lucy: [COPY THE RHYTHM]

Clare: [CLAP THE  *RHYTHM]*

Lucy: [COPY THE RHYTHM]

[Clare wanted to take initiative again but was stopped by Lucy]

Lucy: [CLAP THE  *RHYTHM]*

Clare: [COPY THE RHYTHM]

[Lucy was focused on listening when Clare was clapping]

(Lucy Video [22], ㊽ – I3C,D)

In this instance, Lucy and Clare took turns clapping patterned sounds for the other to copy. In the beginning, they kept clapping 4 beats as a set. At the end of the video, Lucy tried to extend the patterned sounds by repeating the pattern again, showing her intention and behaviour to make chunks of rhythm, which could be translated as the beginning of Level 4 behaviour. In the diary, Clare also commented that '*This kind of activity could last very long sometimes, continuously clapping for many bars, but sometimes it does not go smoothly when the rhythms are not matching, such as this video. Depending on the mood*!' (Lucy Diary [22]). The comment seemed to imply that the good quality of this clapping game in part depends on whether the level of the patterns suits Lucy's ability. The atmosphere also plays a role in this musical interaction.

Overall, Lucy's musical behaviour in the Interactive domain reflected the various forms of musical activities, ranging from singing and chanting to rhythm-making. The musical interactions occurred in a dyad or in group music-making. In some cases, the musical interaction might be embedded in a social interaction context, such as a game. It was also demonstrated that Lucy seemed to show an advanced level of musical behaviours when making music with others, compared with making music on her own.

5.5 Analyses of Lucy's musical development

The following sections present the analyses of Lucy's musical development between the age of 4Y3M and 4Y11M in different perspectives. The analyses were based on the 96 SoI-EY ratings that were coded by the researcher based on the musical instances reported by the mother through diary entries and interviews, as well as observed by the researcher in 29 video recordings. The total reported period spanned 37 weeks, and the analyses were undertaken on a weekly basis from the day of the first interview, which is regarded as week 0. The weeks with no data entry from diary or interviews (week 1, 2, 3, 4, 27, 30, 31, 32, 34, 35, 36) or with no SoI-EY ratings are left blank. Sections 5.5.1, 5.5.2 and 5.5.3 present the longitudinal data of weekly SoI-EY levels within each domain. Section 5.5.1 demonstrates the frequencies of SoI-EY ratings at different levels throughout the reported period; Sections 5.5.2 and 5.5.3 present the line charts and scatter plots of the weekly mean score of SoI-EY levels over the reported period, demonstrating the variance and overall trends of Lucy's development respectively. Table 5.3 presents the weekly mean score by each domain. In each domain, the mean score in individual weeks was generated by the sum of the levels

divided by the number of the ratings. Section 5.5.4 reported the evidence of Lucy's musical development perceived by the mother. The different analytical perspectives seek a comprehensive understanding of Lucy's musical development.

Table 5.3: Lucy's weekly average score in each domain

Week	**Sol-EY average score**		
	Reactive	Proactive	Interactive
0	4.67	2.5	4
5	5	2	
6		4	5
7	5	5	4
8	5	2	4
9		4	
10	3	3.5	5
11	5	5	
12	5		5
13			3.33
14	4	5	3.67
15			5
16	5	4	
17	5	5	5
18		5	
19	5		4
20	5	4	4
21	5		
22		4	4
23	5	5	5
24		5	5
25	5	5	
26	5	5	5
28			3
29	5	5	
33	5	5	4.67
37	5	5	3.5

5.5.1 The frequencies of Lucy's musical behaviours over time

Figures 5.18a, 5.18b and 5.18c illustrate the frequencies of various levels of Lucy's musical behaviours in each SoI-EY domain over 37 weeks. Figure 5.18a shows that Lucy's Reactive musical behaviours were persistently at Level 5 throughout the reported period, with occasional instances rated at Level 3. Figure 5.18b illustrates that, in the Proactive domain, Lucy exhibited musical behaviours at all of the levels in the early phase of the reported period, but became more stable at Level 5 in the later stage. Figure 5.19 demonstrates that, in the Interactive domain, Lucy's musical behaviours were rated between Levels 3 and 5 throughout the reported period. Overall, Figures 5.18a, 5.18b and 5.18c demonstrate that, Lucy's musical behaviours throughout the reported period were rated with all of the three domains. However, there were different features among each domain in terms of the frequencies and distribution of the SoI-EY levels over time. While there is a persistency of advanced level in the Reactive domain, an increasing feature towards higher level in the Proactive domain and the constant variance between Levels 3 and 5 in the Interactive domain were revealed.

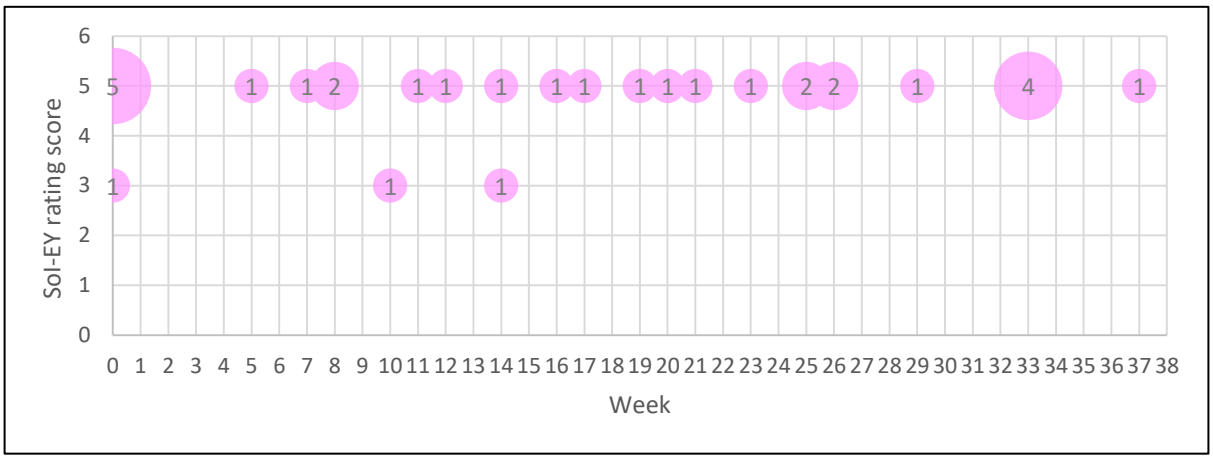

Figure 5.18a: The frequency of Lucy's Reactive musical behaviours over 37 weeks

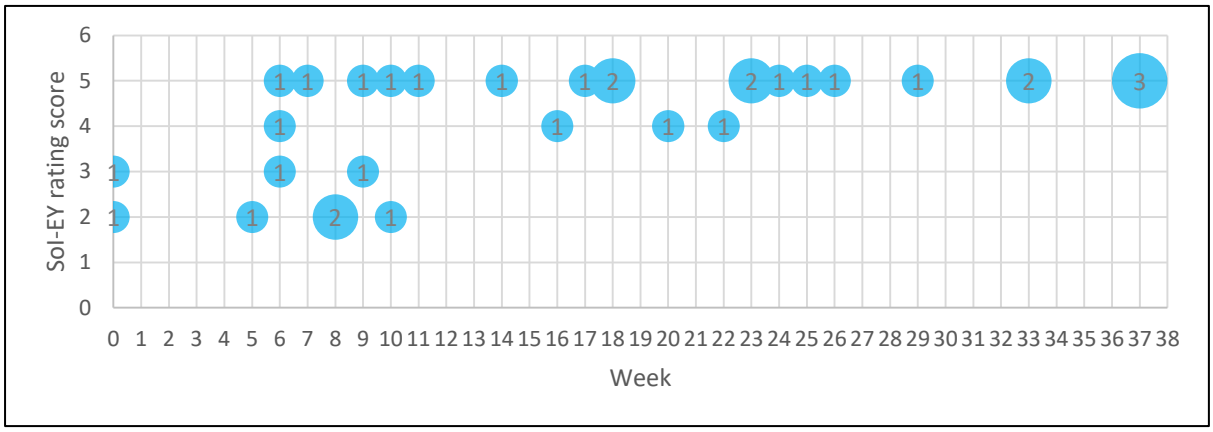

Figure 5.18b: The frequency of Lucy's Proactive musical behaviours over 37 weeks

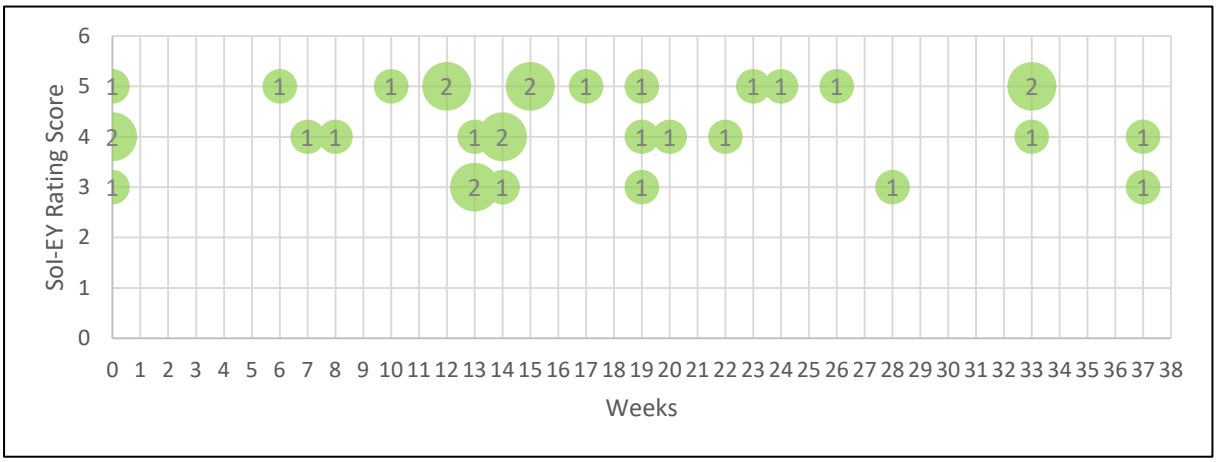

Figure 5.18c: The frequency of Lucy's Interactive musical behaviours over 37 weeks

5.5.2 The average levels of Lucy's musical behaviours over time

Based on the mean score of weekly SoI-EY level (Table 5.3), Figures 5.19a, 5.19b and 5.19c illustrate the average levels of Lucy's musical behaviours each week over the 37 weeks of the reported period. Figure 5.19a shows that, in the Reactive domain, the average SoI-EY level remains at Level 5 throughout the reported period, with two drops to Level 3 and 4 on weeks 10 and 14 respectively. Figure 5.19b demonstrates that, in the Proactive domain, Lucy's average level fluctuated between 2 and 5 in the early stage, but became more stable at Level 5 in the later stage of the reported period. Figure 5.19c illustrates that, in the Interactive domain, the average level of Lucy's musical behaviours varied between Levels 3 and 5 throughout the reported period. In general, Figures 5.19a, 5.19b and 5.19c demonstrate a similar feature with the frequency charts, in which Lucy's Reactive musical behaviours remains at an advanced level, and with an increasing trend and mixed-level feature were demonstrated in the Proactive domain and Interactive domain respectively.

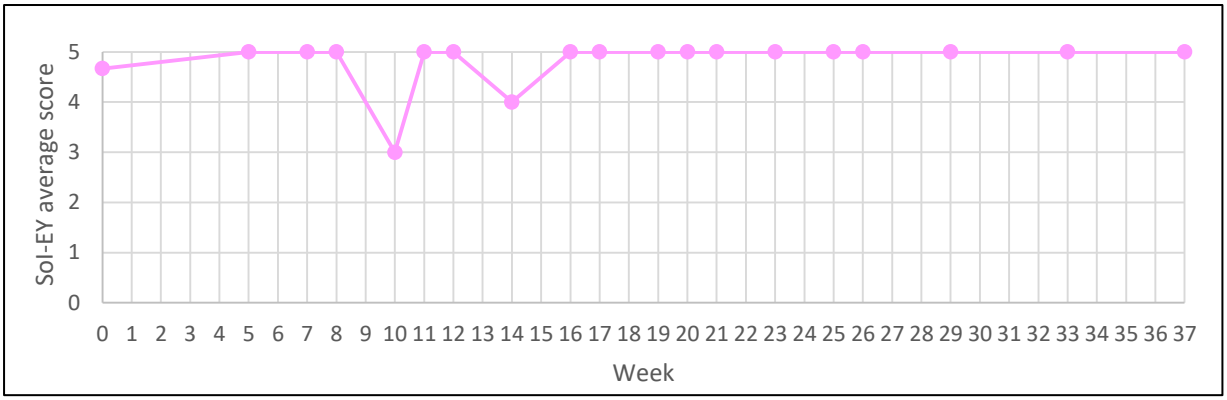

Figure 5.19a: The average SoI-EY level of Lucy's Reactive musical behaviours over 37 weeks

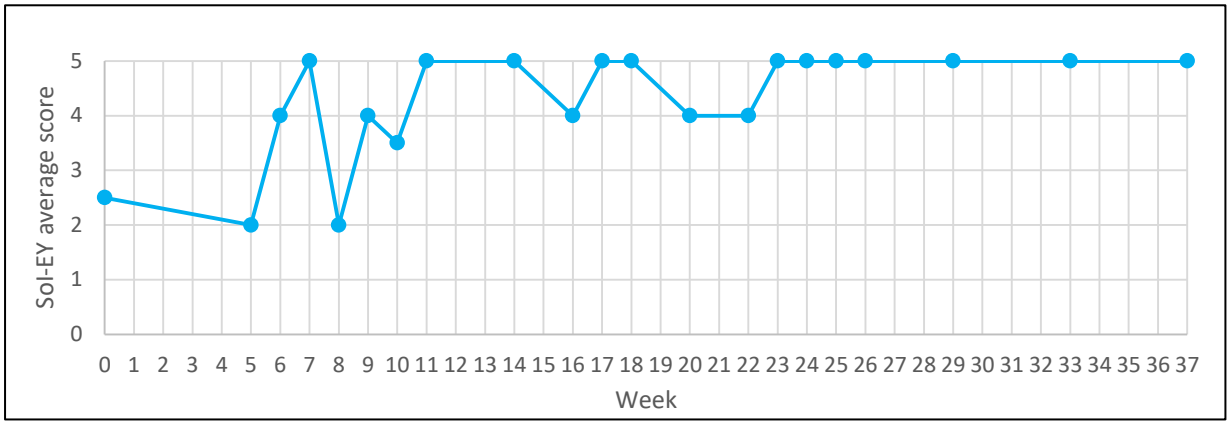

Figure 5.19b: The average SoI-EY level of Lucy's Proactive musical behaviours over 37 weeks

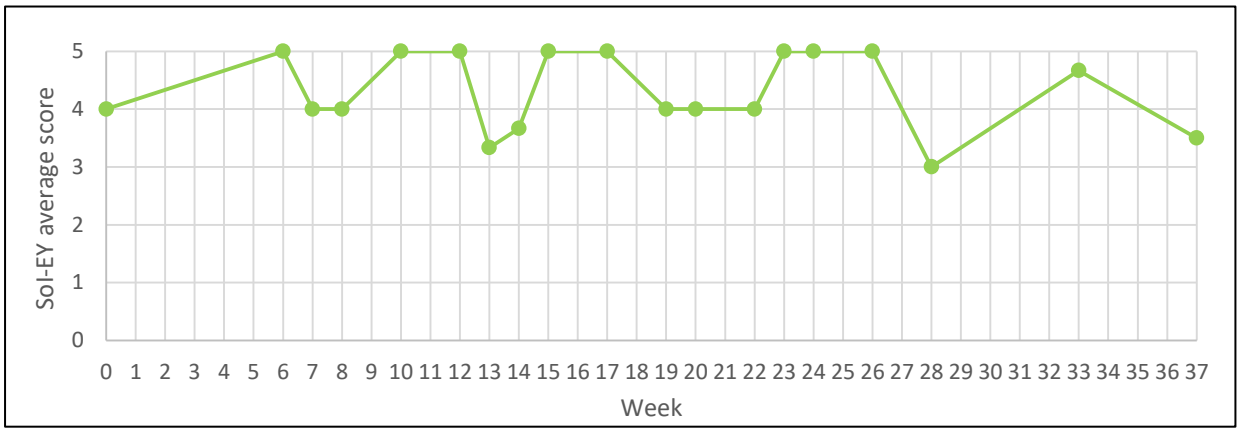

Figure 5.19c: The average SoI-EY level of Lucy's Interactive musical behaviours over 37 weeks

5.5.3 The correlation analyses of Lucy's musical behaviours over time

Based on the weekly mean score that represents the weekly average SoI-EY level (Table 5.3), Figures 5.20a, 5.20b and 5.20c illustrate the trendlines[20] that indicate the general direction of progress on SoI-EY levels over time. To begin with, it is worth noting that in Figures 5.20a, 5.20b and 5.20c, the maximum value of the vertical axis was set as Level 6, in order to fit the increasing trendline in the chart. Figure 5.20a shows that, the trendline for the Reactive domain demonstrates a slight increase between Levels 4 and 5 (R^2=0.0758); Figure 5.20b demonstrated a radical increase between Level 3 and 6 (R^2=0.416) for the Proactive domain; Figure 5.20c illustrates a slight decrease for the Interactive domain between Levels 4 and 5 (R^2=0.0127). Furthermore, the Pearson correlation analyses between the variable of weekly mean score in each domain and the variable of time indicates a significant positive correlation in the Proactive domain [$r = 0.645$, $n = 21$, $p \leq 0.01$]. The correlations are not statistically significant in the Reactive domain [$r = 0.275$, $n = 19$, $p = 0.255$] and the Interactive domain [$r = -.112$, $n = 19$, $p = 0.647$]. This might reflect the stability of high levels and a possible ceiling effect in the Reactive domain and the variation of the levels over time in the Interactive domain. In both cases, the variable of time has no statistically significant correlation with the variable of the weekly mean score.

[20] A trendline (linear regression line) calculates an equation that minimise the distance between the fitted line and all of the data points. It is a best fit line in relation to the data points.

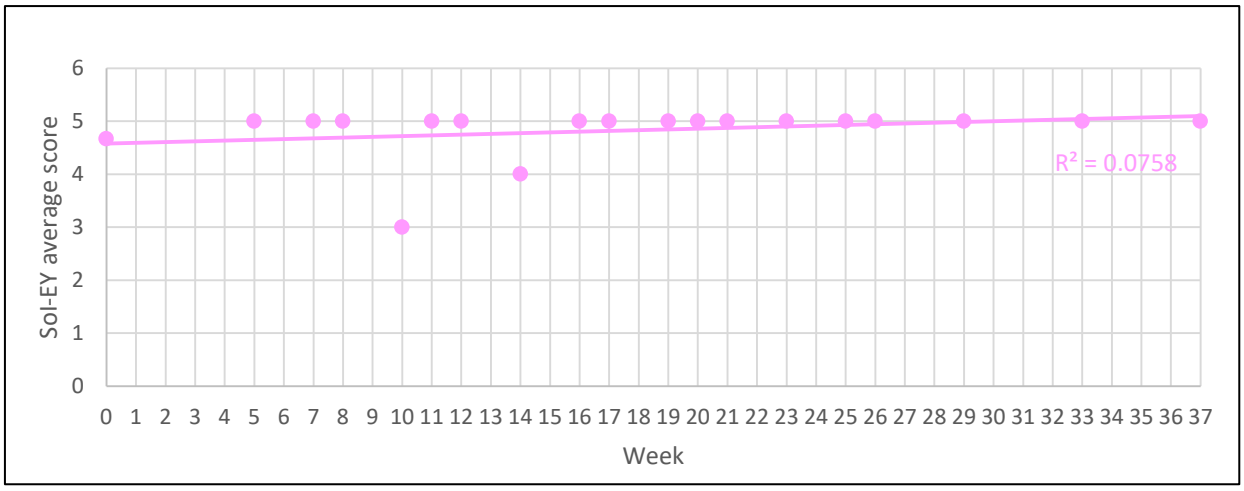

Figure 5.20a: The correlation between Lucy's SoI-EY average point score and time in the Reactive domain

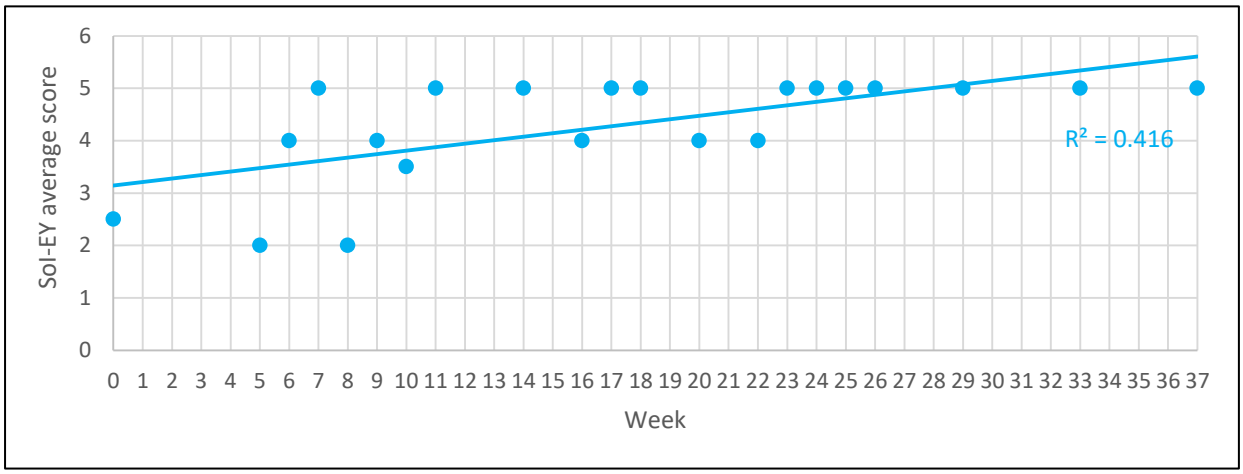

Figure 5.20b: The correlation between Lucy's SoI-EY average point score and time in the Proactive domain

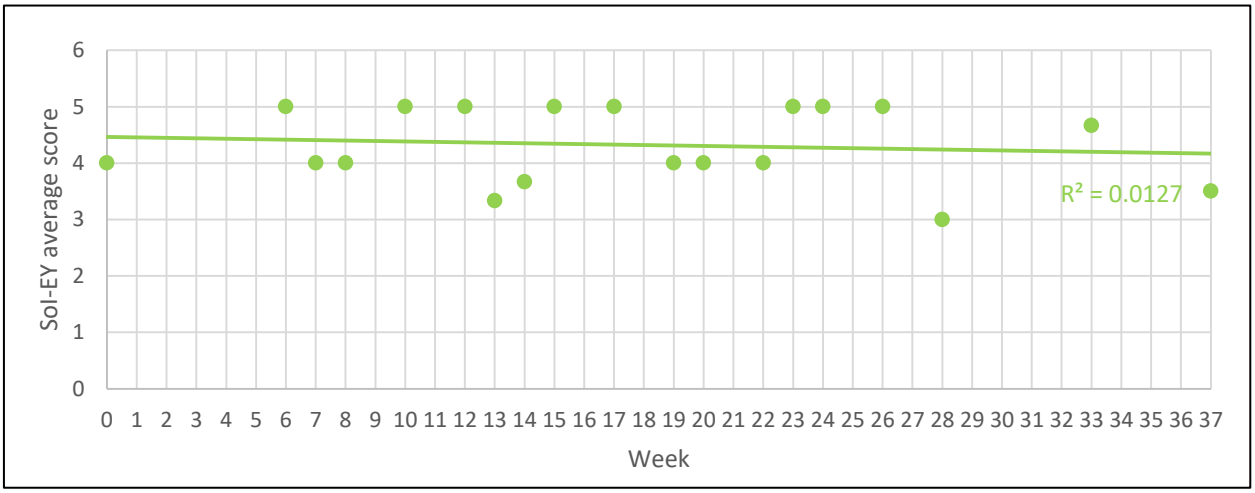

Figure 5.20c: The correlation between Lucy's SoI-EY average point score and time in the Interactive domain

5.5.4 The musical development perceived by the mother

In addition to the analyses of Lucy's SoI-EY ratings over time, the description from the mother regarding Lucy's musical progress was also analysed in order to gain a comprehensive understanding of Lucy's musical development. Lucy's musical development and contextual factors were perceived by the mother Clare. For instance, Clare described the learning path of singing a whole piece of the song from the Yoyo DVD series:

> *I think in her situation, she would listen [to the song] in the beginning. After listening, she would sing and dance [along], yes, and in the following days, [the singing and dancing] will take place in various situations, such as playing games. Also, if Julie is there to prompt her, or sometimes I or her uncle was playing with her, she would alter the melody and lyrics, such as changing the lyrics to be about herself or Julie, and sometimes it came with a bit of drama. The presentation will be better.* (Lucy Interview [2])

The description above showed how Lucy learnt a new song that she watched from the children's DVD. Examined through the SoI-EY framework, Lucy's learning of a new song started with Reactive musical behaviour (listening attentively), Interactive (dancing and singing along), and later Proactive musical behaviours (singing in different situations and altering the melody or lyrics). When Lucy added drama into her own version of singing, the Reactive musical behaviour reappeared, as she created her own interpretation of her singing performance. Figure 5.21 illustrates the developmental path of Lucy's learning of the song in this reported phenomenon.

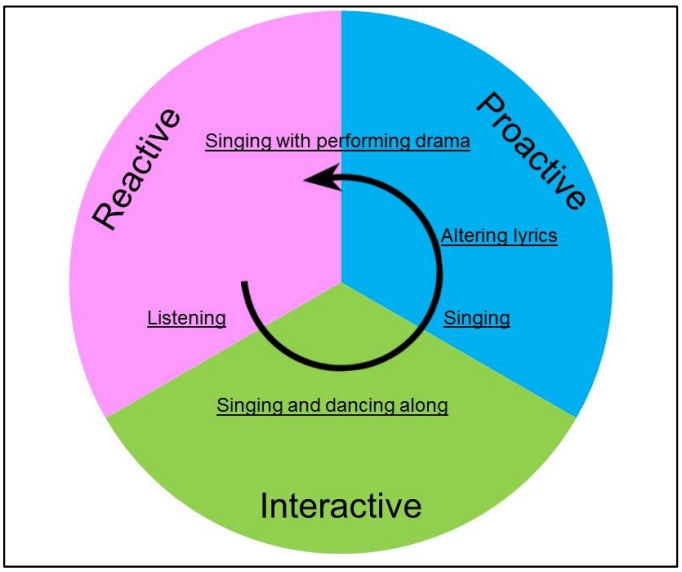

Figure 5.21: Lucy's music developmental path when learning a song from the children's media

Clare also noted several contextual factors that seemed to contribute to Lucy's musical development. For instance, it was reported that the repetitive exposure to the same repertoire from different contexts, such as experiencing the nursery rhymes from the CD at home and from singing activities at school, reinforced her familiarity with the tune, which was likely to promote the SoI-EY level of Lucy's musical behaviours in the Proactive domain. In addition, it was perceived by Clare that Lucy was more likely to complete the songs when singing with Julie or her school friend, compared to singing the songs on her own (e.g. Lucy Diary [15]). In particular, Julie's role of correcting or complementing Lucy's singing further increased Lucy's singing opportunity and accuracy in tune and lyrics (Lucy Diary [13]). In short, the environmental factors, such as the modelling of the sibling and the overlapping of musical exposure in different places, seemed to facilitate Lucy's musical ability of singing the whole songs with others (Interactive Level 5) and independently (Proactive Level 5).

Furthermore, Lucy's singing progression was perceived by the mother, which she contributed largely to Lucy's improvement in English (also see 5.6.5):

> *I feel that her [English] language has had a huge progression, and the vocabulary also boosted a lot. The words [that she used] are also much harder. Therefore, she can sing the songs she wants to sing through the expression of the words. It's much easier. She might only know the tune before but didn't have the language as a medium, so she wouldn't like to hum or learnt it more slowly. However, as she understands the words now, she sings it more fluently and gains a sense of achievement, and Julie and we will praise her, which stimulates her output easier. Therefore, I think language plays an important role in music [development]. (Lucy Interview [3])*

The examples above demonstrated that, according to the account provided by the mother, Lucy's musical development involved the shifts among SoI-EY domains and the progression from lower to upper SoI-EY levels. The contextual factors such as the sibling's modelling role, the sharing singing repertoire across different settings, and the proficiency in the language, were perceived as beneficial to Lucy's musical development.

5.5.5 Summary

This section explored Lucy's musical development in different analytical perspectives. Through the examination of Lucy's SoI-EY ratings in terms of their frequencies and weekly mean score over 37 weeks, the findings indicated a steady presence of advanced level musical behaviour in the Reactive domain, a notable increase to higher levels in the Proactive domain, and a combination of various levels in the Interactive domain. There was a statistically significant positive correlation between the weekly mean score and the

passage of time in the Proactive domain. The analyses of the mother's perception on Lucy's musical development revealed a developmental path when learning new songs, in which Lucy sequentially exhibited musical behaviours of Reactive, Interactive, Proactive, and Reactive domains. Contextual factors such as repetitive musical exposure in various settings, the supportive role from peers and the sibling in complementing or correcting Lucy's singing, and language proficiency that was regarded as a medium for singing, were perceived to be beneficial to Lucy's musical development.

5.6 Analyses of contextual factors of Lucy's musical development

This section presents the analyses of Lucy's musical environment within the family context that might have an influential role in shaping her musical development. Examined through the lens of Ecological Systems Theory (Bronfenbrenner, 1979, 2005), Lucy's musical environment is conceptualised into Micro-, Meso-, Exo-, Macro- and Chronosystems, representing different aspects from the materials and social interaction within the immediate settings to the remote factors, the cultural impacts, along with the consideration of the passage of time. The following sections present the aspects of each system that might play an influential role in Lucy's musical development.

5.6.1 An overview of Lucy's socio-cultural musical environment

Figure 5.22 illustrates Lucy's musical environment conceptualised into Microsystem, Mesosystem, Exosystem, Macrosystem and Chronosystem, demonstrating the different aspects of her musical environment in the family context that might play an influential role in shaping her musical development. The Microsystem represents her family home, in which her musical engagement with the materials available in the home, the nature of musical interaction with her parents and sibling, and the values and expectations of Lucy's mother with respect to Lucy's music learning, are explored. The car was regarded as an extension of the family home, as the family was reported to gain musical experiences during the car journeys. The Mesosystem represents the family's participation in the local social network, institutions and facilities in the local community, in which Lucy gained musical experiences with the family's support and involvement. The local network included the family's friends who had regular meetups and created opportunities for Lucy's musical engagement. The local settings included her school, a dance studio and a local church. The Exosystem explores how the factors of musical biographies of the parents and the family's connection to their home in Taiwan might have shaped Lucy's musical experiences and development. The

Macrosystem identifies various cultures embedded in Lucy's environment in the forms of cultural artefacts experienced by Lucy and the cultural beliefs of the family. The Chronosystem considers how the temporal events or patterns embedded in the passage of

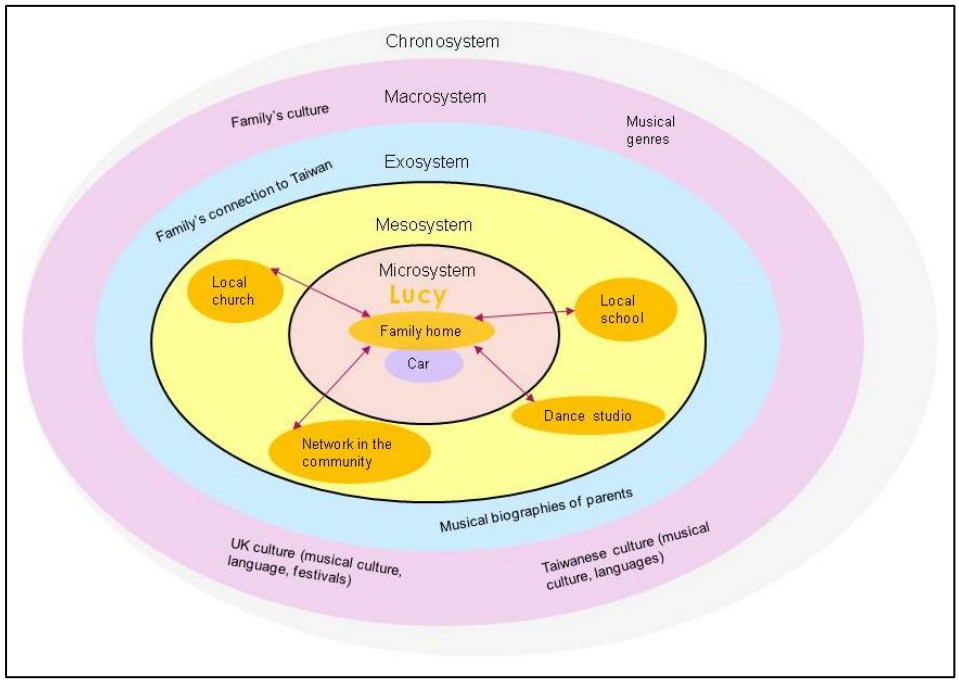

Figure 5.22: Lucy's musical environment within the family context through the lens of the Ecological Systems Theory (Bronfenbrenner, 1979; 2005)

time might shape Lucy's musical development.

5.6.2 Microsystem

Lucy's Microsystem comprised her family home and the car journeys with the family. In the home environment, she was exposed to abundant musical resources and had opportunities for musical engagement on her own or with others. Her musical engagement in the home was integrated into her daily activities, such as during meals, playing with toys, having a shower or before sleep. The musical activities in which she was engaged in the family home included spontaneous singing, singing and dancing to music, imitating dancing steps from music videos, and music- and rhythm-making games on her own or with others. Lucy's musical partners at home included her parents and sibling, although other family guests, such as her friend and the Taiwanese relatives who came to visit, also contributed to her musical experiences in the family home. Lucy's musical interactions with her family members were extended to their car journeys, in which she was reported to listen to and sing along to various types of music on CDs and on the radio in the car. The following sections explore

aspects of musical materials in the family home with a focus on media and technology, the social interaction in the family home, musical experiences on the car journeys, and the mothers' beliefs and expectations for Lucy's music learning.

5.6.2.1 Media and technology in the home environment

There was a variety of musical materials available at Lucy's family home for her to respond to and make music. The engagement with electronic media (CDs, DVDs, musical toys and instruments) and digital technologies (computers, TVs) comprised a considerable part of Lucy's musical activities in the home environment, as these musical activities were reported by the mother in the diary and in interviews throughout their research participation. The family had a collection of CDs that Lucy would play by herself on a CD player in the living room. The CD collection included English nursery rhymes, Western classical music (Figure 5.23), music from Yamaha Music Schools[21], and the audio-version of Taiwanese children's DVD series 'Yoyo Roll Call'. When staying at home, Lucy would choose the CD to play on a CD player in the living room (Lucy Diary [6]). When the music was playing, she would sing or dance along with music or engaged herself in other activities, in which music was in the background. Furthermore, there was an electronic keyboard toy that Lucy liked to play with (Figure 5.24). Instead of making sounds on the keyboard, Lucy would press the button to play recorded music, such as 'Santa Claus is coming to Town' and 'Jingle Bells', and dance to the music by herself or with her friend Chen, as shown in the video recordings provided by the mother. These musical activities demonstrated Lucy's control of the media (Proactive) with a desire for dancing (Reactive) or singing along (Interactive).

Figure 5.23: Part of the collection of the CDs that Lucy likes to play at home

Figure 5.24: The electronic keyboard toy in Lucy's home

[21] Yamaha is a piano-leaning system that is popular in Taiwan. They publish a set of CDs in accordance with their curriculum and learning materials.

Among the electronic media available in the home environment, Lucy frequently watched the Taiwanese children's DVDs 'Yoyo Roll Call' (Yoyo) series that were brought from Taiwan. Clare explained that she provided the Yoyo DVD series to Lucy as a result of her own musical preferences:

> *I don't like the simple children songs that I listened to in my childhood, which were repeated every four phrases. Therefore, the music that I provide her is the ones that I myself also feel nice, such as Yoyo, because the quality of the videos is good, and the dressing [of the dancers], the story, and the arrangement of music, I myself also like it a lot.* (Lucy Interview [3])

The family had a total of 6 volumes in the home, among which Volume 3 was perceived to be Lucy's favourite, as '*the melody is simpler and more repetitive*' (Lucy Diary [12]). Coming as a set of DVD, CD and booklet, each volume comprised a repertoire of contemporary children's songs. In the DVD version, the music videos featured a group of young dancers singing and dancing against a colourful background (Figure 5.4b, see p.92). Clare also noted that the form of CDs and DVDs that allowed repetitive playing familiarised Lucy with the songs more easily, compared with the songs played from the radio that could not be repeated. Nevertheless, Clare expressed her preference for playing CDs rather than DVDs, as she was concerned about Lucy's eye health if watching the screen for too long.

Lucy was reported to watch and dance to the songs from Yoyo Roll Call CDs and DVDs every two or three days. She sometimes danced with Julie and sometimes enjoyed her 'solo time'. Also reported by Clare, Lucy would request to watch the same volume on different days and sing the same repertoire throughout the day. Furthermore, Lucy would read the booklet and discuss with Julie their favourite musical pieces and the costumes that the dancers wore. Clare summarised Lucy's and Julie's distinctive preferences on Yoyo's musical pieces, in which music appeared to be multi-modal experiences for them:

> *Lucy likes the ones with simple melodies, as she can handle it better, and the ones with a slower tempo, and ones with a complex and bright background. Julie would admire different music styles, not necessarily the simple ones, and choose the one she likes.* (Lucy Interview [2])

In addition to the musical engagement with a range of electronic media products, Lucy also experienced music through TV programmes and music videos from the YouTube website. With respect to TV, Lucy watched the programmes on the local children's channel CBeebies, such as 'Peppa Pig' and 'Charlie and Lola'. She would dance to the songs that appeared at

the end of the episode or copy chants that she heard from the programme. In addition to the children's TV channel, Lucy also gained musical experiences through the programmes that the family watched together, such as 'Britain's Got Talent', in which the contestants perform music or other artistic skills judged by a celebrity panel. The YouTube website was another rich source where Lucy watched a variety of music videos, such as Disney songs and Korean or Japanese popular music. The computer was linked to the bigger TV screen in the living room, which made it easier for Lucy to choose the video clips, watch and dance or sing along. Dancing to YouTube videos seemed to occur mostly in a social context, in which the selection of videos to play as well as dancing activities were joined by her parents, sibling or her friend Chen when she came to visit. The family's preferred genre of Korean and Japanese popular songs reflected the musical biographies and preferences of the parents. Regarding the Korean pop music videos that involved dancing, Clare expressed her positive views on the simplicity of their melodies, but also was concerned about the suitability of music videos for children of Lucy's age to watch:

> *The melody of Korean pop songs is very simple. It is electronic music, emphasising the repetition of rhythm, so it is easy to hum. Like Girls Generation, I think it is quite good, and their music videos are also in good quality. But I don't like many [Korean] groups, because they keep emphasising the [sexy] moves, or a female dancer moving on a male dancer's body, I don't think it is good, so I prohibit them from watching these songs, otherwise, they used to watch them a lot.* (Lucy Interview [2])

Electronic media and digital technologies were not only for Lucy to be passively received, as Clare reported Lucy's enthusiasm in operating the smart phone while making music:

> *Y: What kind of media does she like to operate?*
>
> *C: Filming herself. Be the host of the broadcast herself. [Imitating Lucy] 'now, we will sing a song' or something like this, she would design the programme, sing by herself, direct and perform by herself.* (Lucy Interview [3])

The variety of media and technology available in the home environment introduced Lucy to various musical genres that reflected the local UK culture as well as the cultural backgrounds and musical biographies of the parents. The repeated listening through CDs and DVDs enabled Lucy to get familiar with the music, which might have contributed to her independent singing. Music that came with visual input seemed to shape her musical responses as social learning. When listening to the audio music without the reference of dancing styles, for example, Lucy would create her own dancing steps, which demonstrated her understanding of simple music structure and original expression of musical features.

However, when music was experienced along with visual stimulation in which dancing was demonstrated by the dancers in the music videos, Lucy would copy the dancing steps from the dancers and aim for proficiency in dancing. The imitation of dancing might enhance her understanding of musical structures through kinaesthetic experiences; it also demonstrated her learning of musical responses as socially constructed.

5.6.2.2 Social interaction within the family home

Lucy's musical engagement in the family home was partly embedded in the social interaction between her and other family members. For instance, Lucy would sing with her mother and sister, and the family would dance to music together while watching the music videos. The family not only joined in Lucy's musical activities, but they also responded positively to Lucy's musical performances. In general, the social interaction with the family members seemed to play a supportive role in Lucy's musical development.

The mother Clare was Lucy's musical partner, as well as a motivator and an audience. They sang songs together on different occasions, such as playing at home or having a stroll in the local area. The songs they sang together, as reported in the diary, included children's hymns and English nursery rhymes. In addition to singing, they also played clapping games together, in which one copied a short rhythm from the other, as shown in the video recording (Lucy Video [22]). Furthermore, Clare established a 'bedtime ritual' by reading Chinese rhymes with Lucy and pointed to each Chinese character along with the rhythm. She motivated Lucy's singing by 'making mistakes intentionally when humming songs in order to arouse her interest to sing [them] again and again' (Lucy Diary [13]). When Lucy was singing or dancing to music, Clare was also an audience who gave positive comments, as reported in the interview (Lucy Interview [3]). In general, Clare was engaged in various musical activities with Lucy, which seemed to play a stimulating role in Lucy's musical engagement.

Colin was reported to dance with Lucy and Julie when they watched the music videos on YouTube together in the evenings. He would choose his preferred genres of Korean and Japanese pop songs to watch and dance to, which had uplifting features and were also favoured by Lucy and Julie. In terms of the musical interaction between Colin and two girls, Clare explained that, 'he is not nurturing [their musical experiences] intentionally, but he regards it as a medium between himself and his daughters. After all, he sometimes feels tired after work' (Lucy Interview [1]). The musical interaction between Lucy and Colin had an entertaining feature and was shaped by his musical preferences and facilitated by the availability of media.

Besides the parents, the older sister Julie seemed to play a significant role in Lucy's musical experiences. According to the reported musical instances, Julie not only danced,

sang and played musical games with Lucy, she also played a modelling role who introduced various musical genres to Lucy and correct or complement Lucy's singing. Clare commented on how Julie made an influence on Lucy in musical aspects:

> *I think Julie has a huge impact on her. [Lucy] would copy her speaking, dressing, facial expression, and she [Lucy], of course, is also copying her in terms of music. Lucy knows Michael Jackson, the person that I did not know until university. She is able to sing some songs of Michael Jackson, and she would also listen to some songs of One Direction, which are all coming from Julie, as it is impossible to learn these songs from the nursery. Therefore, firstly, Lucy has had a wider music repertoire; secondly, [Lucy] wanted to imitate Julie when seeing her playing the piano; thirdly, if not arguing with each other, [Lucy and Julie] would be chatting and singing along during their walking; fourthly, Julie would teach Lucy the songs that she [Julie] likes to sing, correct Lucy when she is singing, or complement the parts that Lucy couldn't do. There are many instances like this.* (Lucy Interview [3])

In addition, the family would watch TV programmes together, such as 'The Voice' and 'Britain's Got Talent'. Whilst watching these programmes, the family would guess who the winner would be. However, as described by Clare, Lucy 'listened while playing with her toys, occasionally giving comments such as 'It sounds nice' or 'His outfit is strange' (Lucy Interview [3]). Musical engagement that involved the whole family also occurred when they travelled in the car, as they would have discussions on their preferred musical pieces and how they felt about different music (see Section 5.6.3).

The people that interacted with Lucy musically within the family home were not limited to her parents and sibling. The family's friends and extended family who came to visit regularly also provided Lucy with opportunities for musical engagement with different people. For instance, during the weekly playdates with her friend Chen, they would dance to the music together from the electronic keyboard toy or YouTube (Section 5.6.3). In addition to influences from her friend, the visit from the Taiwanese relatives also extended Lucy's musical experiences (Section 5.6.4). These extensive musical experiences taking place in the family home highlighted the openness of different people to be present in the family home and play a part in Lucy's musical experiences, which was facilitated by the family's social network in the community (Mesosystem) and the family's connection to their home country (Exosystem).

In general, the social interaction taking place in the family home supported Lucy's musical experiences in many ways, and this was shaped by the musical preferences of the family members and facilitated by the available media and technology in the home environment.

While the parents joined in Lucy's musical engagement or gave positive feedback, her older sibling (Julie) and friend seemed to have an influential role in modelling their singing to Lucy, introducing their favoured music to Lucy, and being Lucy's musical playmates. Furthermore, Julie played the role of a 'teacher' who gave instruction when playing musical games and corrected her singing. The family visitors from Taiwan provided extended musical genres to Lucy, and the similarity in age was regarded as facilitating musical interaction between Lucy and her uncle. The social interaction in the family, in Lucy's case, also reflected the flexibility with respect to the people present in the family home that was not necessarily limited to the family members. Friends and extended family might bring music from their backgrounds to Lucy and provided musical stimulation that would have been different from musical provision by the family members. These factors might have a positive impact on Lucy's musical development.

5.6.2.3 Musical engagement on the car journeys

Lucy gained musical experiences on the car journeys when the family went for day trips to other cities in the UK during the summer holiday. In the car journeys, the family listened to different music, such as the Disney princess songs and children's hymns CDs and the radio stations that played old English songs or Classical music. This variety was to suit the musical preferences of different family members. They sometimes had a discussion about their preferred songs or their feelings about the songs, such as a discussion about triple time in waltz and common time in popular dance music (Lucy Diary [8]). Lucy was also reported to sing fluently with the songs from the Princess CD, and she would guess which princess it was by recognising the voice of the singer, the musical feature, or linking the music with the story scenes. Clare noted that it was during the car journeys that the influence from Colin's musical preferences became more explicit, as the family would listen to music of his preference, such as the Korean and Japanese pop songs and old English songs. In general, the car journeys provided a musical environment for Lucy to master the songs by listening to the songs repetitively, and the social environment in the car also enabled Lucy to experience music of the father's preferences.

5.6.2.4 Parenting practice and its integration with music

Parenting practice in the family was explored by asking the parents about their views on the most important things when their children grew up. Clare commented that she hoped her daughters were able to stay healthy and happy in their lives. She emphasised that happiness was achieved not by a lack of discipline, but by the ability to stay positive in life. When the pursuit of happiness is integrated into music learning, Clare further articulated,

Like what I said to Julie, happiness does not mean that you don't practice the piano and feel happy. Instead, you work hard on practising and enjoy a sense of achievement. This happiness lasts for longer and represents the joy of truly loving the piano. (Lucy Interview [1])

Furthermore, parenting practice and its integration with music was reported in the diary. Clare noted that she established a 'bedtime ritual' by reading the Chinese rhymes with Lucy. In this instance, rhythmic reading was applied as an activity to enhance and make special the daily routine of bedtime. The choice of rhythmic reading was due to the benefit of rhythmic activities on brain development, as explained by Clare.

In general, Clare's emphasis on 'happiness' in her parenting practice seemed to have an impact on how she would view Lucy's music learning in the future. For example, she viewed the persistency of instrumental practice as a way to achieve happiness, and she would prefer to send Lucy to group music classes rather than private lessons, as group learning 'is more fun'. Rhythmic activities were applied to enhance the daily routine of bedtime, with the mother's awareness of the benefit of rhythm on brain development. Aspects of Clare's musical beliefs and expectations for Lucy are presented in the following section.

5.6.2.5 The mother's beliefs and expectations for Lucy's musical learning

The parents' expectations for Lucy's musical learning seemed to be influential in their musical provision to Lucy. For Clare, she viewed musical skills, such as singing in tune or playing a musical instrument, as essential skills that Lucy and Julie needed to possess in their lives. She believed that the acquisition of these skills would enrich their social lives when they became teenagers. Furthermore, drawing on her own positive music-learning experiences in Yamaha Music Schools, she had a strong tendency to wish to send Lucy and Julie to the same music classes, in which Clare believed they could receive a sound music training:

I hope that my daughters are able to play it out when hearing the music they like. Being able to sing in tune. […] If you know the basic skills of listening, chorus, notation sight-reading, it could only be gained from Yamaha, you cannot get it from one-to-one lesson. It's my experience […] I think music will be an important thing to accompany their teenage lives. That is why I actively involve them in [music]. (Lucy Interview [1])

[…] If she can, before she attends high school [I will send her to Yamaha] and then it's her choice. By then, you will have learnt to appreciate music, there will be so many musical clubs in high school, and you can enjoy playing in an ensemble without starting from the beginning. I think [sending her to group music lesson] is the basic education

that the parents should give them […] I wouldn't send her to one-to-one [lesson], because I think it is a killer, it is so boring. She would not continue before she starts to enjoy music. (Lucy Interview [3])

In addition, Clare intentionally provided rhythmic materials and activities to Julie and Lucy, such as reading Chinese rhymes to Lucy. This provision was due to her belief that providing rhymes and rhythmic activities to children from a young age would be beneficial to their brain development and the stability of their emotions (Lucy Diary [6]). Despite her value she placed on the ability to play a musical instrument and appreciate music, Clare hoped her two daughters would not go down the professional route of the music training, as 'it is too hard'.

Overall, Clare's belief and expectations for Lucy's musical learning seemed to be embedded in Lucy's daily musical experiences, as the family provided a nurturing musical environment for Lucy, as well as arranging music-related classes (tap-dancing and performing classes) for Lucy to gain extensive musical exposure and experiences.

5.6.3 Mesosystem

The Mesosystem of Lucy's musical environment represented her musical engagement expanded from her family home to the people, institutions and facilities in the local community. These included people in the community, such as the family's friends who lived in the same area and would meet up with Lucy's family, and the institutions that provided opportunities for Lucy's musical engagement, such as the local school that Lucy attended, the dance studio where she had the tap-dance and performing classes, and a local church. Lucy gained musical experience through the family's social network and the participation in the local community.

The family's network in the community, on the musical front, included another Taiwanese family who lived in the same area and had a girl, Chen, who was of a similar age to Lucy. The families had regular meetups, normally on weekday afternoons, for the children to play together and for the mothers to catch up. It was frequently reported in the diary that Lucy and Chen would sing and dance to music together. Furthermore, Chen also played a modelling role in singing and influenced Lucy's musical preferences regarding the Disney Frozen songs (see Section 5.6.2). Clare articulated the impact of Chen on Lucy's musical preferences and her interest in singing:

She likes [Frozen], mostly influenced by these two ladies [Julie and Chen]. Chen sings very well, perhaps because of the musical input provided by the private school that she attended. They played together every Thursday. Chen always sings the whole song, and she also has clear pronunciation. We were always very surprised and clapped

hands [to Chen's singing]. I feel that Lucy is copying Chen, admiring her good singing. Chen also sings in tune and in good quality of voice. Thus, Lucy wants to copy her, and this is why she has been enthusiastic about Frozen [songs] for such a long time. (Lucy Interview [2])

The family's network in the community featured gatherings with families with a similar cultural background, and the opportunities to play with friends of similar ages was likely to facilitate Lucy's musical experiences and development.

In the Reception class that Lucy attended every day, she learnt the English nursery rhymes that she would also sing outside school, such as at home or on the way back home with her friend. Furthermore, during Christmas, the family went to watch a Christmas show at school which was performed by the school children. Lucy and her classmates performed children's songs that had Christmas connotations, such as *Dominic the Donkey* and *It was on a Starry Night*. They not only did actions along with their singing, but they also wore Christmas costumes. It was also reported by Clare that, as the school frequently rehearsed the Christmas songs, Lucy would sing the same songs at home for practice. In general, Lucy was immersed in music from English culture at her school in the context of adult-led group learning, such as the nursery rhymes and the Christmas songs, and she would bring the songs to the family by singing them at home. The family participation in the Christmas event might also motivate Lucy to rehearse the songs more frequently and enjoy the singing performances, which might enhance her musical development.

Lucy was taken to tap-dance and performing classes once a week in a local dance studio (also see Section 5.2). In the tap-dance class, Lucy learnt how to dance rhythmically with her feet, which she also enjoyed practising at home during the week. In the performing class, Lucy learnt to sing and perform the music of the story plots from the musical 'Oliver!' Through these lessons, Lucy was introduced to the musical form of tap-dancing and the English cultural heritage. To familiarise Lucy with the musical, Clare also played the video clips of 'Oliver' from YouTube for Lucy to watch and sing along to at home. The family's support for Lucy in attending the tap-dance and performing classes provided Lucy with extensive musical exposure to various genres and more opportunities for her musical engagement.

Lucy and her family went to a local church every Sunday morning and she had learnt a number of children's hymns from their Sunday school. She would also sing these songs in different places, such as at home or on the car journey. There was an instance in which Lucy was singing a children's hymn with Clare together as a musical game. Clare also reported that Lucy and Julie would also discuss the songs they learnt at Sunday school, such as

singing it faster or slower (Lucy Interview [2]). The family's religious commitment and the musical culture within Christianity introduced Lucy to the musical genre of children's hymns and provided more opportunities for Lucy to sing the children's hymns in other contexts, such as in the home or during car journeys.

In general, the family's connection and engagement in the local community extended Lucy's experiences of music from different cultures. Furthermore, the attendance of the school and the extra-curricular classes provided Lucy with the experience of group music-making led by an adult. It is also noted that Lucy carried the songs across different settings, such as singing the nursery rhymes that she learnt from school at home or singing the children's hymns that she learnt from church on a car journey, which showed her continuity of musical behaviours across settings. The establishment of social networks between the families within the local community enabled Lucy to have musical interaction with her friends of a similar age and cultural background.

5.6.4 Exosystem

The Exosystem comprised the remote factors that played an influential role in Lucy's daily musical experiences. These included the musical biographies of the parents and the family's connection to their home country. The musical biographies of parents, which also included the musical preferences of the parents, seemed to have an impact on Lucy's daily musical exposure as well as the parental beliefs about her music learning. The family's connection to Taiwan introduced Lucy to Taiwanese musical cultures through the consumption of media and musical interaction with Taiwanese relatives. These remote factors were recognised as playing an influential part in shaping Lucy's daily musical experiences.

The musical biographies of the parents refer to the music- listening and music-learning experiences in their childhood and later in life and their current musical preferences. As to Clare, she expressed a strong memory of attending the Yamaha Music Class when she was five years old, which made her believe that music learning should occur in a fun way. She described the playful activities in the class in addition to keyboard training and said she would definitely let Lucy attend the Yamaha Music Class when she turned 5. This positive music learning experience led Clare to further involvement in music in her later life, such as playing the flute in a wind band, studying modules in her university music department, and becoming a school music teacher in Taiwan. Based on her musical knowledge and skills, she gave piano lessons to Julie at home, which stimulated her musical imitation and interest in learning the piano (Lucy Interview [3]). When it came to musical preferences, Clare preferred listening to 'Programme Music' – the music that she defined as being related to literature or contained lyrics, such as Les Miserable songs. On the other hand, the father

Colin had a preference for Japanese and Korean pop songs as a result of his previous one-year work assignment in Japan. Colin's musical preferences were influential in the selection of music played to Lucy at home and in the car. For instance, Lucy was reported to watch and dance to the Korean pop music videos with Colin and Julie. Overall, the biographies of Clare and Colin, although implying different musical preferences or values, both played a role in shaping Lucy's musical environment and experiences in an unique way.

The family's connection to Taiwan, which characterised the family's position and identity as part of Chinese diaspora in London, enabled Lucy to experience music and people from a Taiwanese context. This included the Taiwanese children's media that the family consumed and the musical interaction with Taiwanese relatives. With respect to the Taiwanese children's media, the family had several volumes of the children's DVD/CD series 'Yoyo Roll Call' that was frequently watched and listened to by Lucy and Julie. It was reported in the diary that Lucy would dance to music while watching, as well as learning to sing the tunes of the contemporary Chinese children's songs. The musical interaction with the Taiwanese relatives occurred when the relatives came to the UK to visit the family. For instance, the musical interaction between Lucy and her uncle was reported in the diary, in which they copied simple tunes from each other while creating funny lyrics to entertain each other (Sections 5.4.3 and 5.6.2.2). It was noted by Clare that the uncle introduced the musical genres that were different from Lucy's previous musical exposure in the family, which seemed to extend Lucy's musical experiences:

> *The uncle is younger than us. Thus, the music he listens to is different from us. After Colin and I came back [from holiday], I found a change in music that Lucy likes humming. I found that one day the uncle said 'dog barks, dog barks' and Lucy made the rhythmic sounds of woof woof woof woof, a bit of something like syncopation […] My brother played it on YouTube and I realised that this is more like black soul music. […] My husband and I would never listen to songs like this, but I feel that her uncle is quite influential to them, perhaps because he is younger.* (Lucy Interview [2])

In this respect, the musical interaction with Taiwanese relatives does not necessarily expose Lucy to Taiwanese cultural heritages in music, but Lucy was introduced to the musical genres that were preferred by her Taiwanese relatives, which might also reflect the musical types that were popular amongst the Taiwanese population. The contact with the relatives from Taiwan also provides opportunities for Lucy to communicate in a Mandarin-speaking environment. In general, the family's connection to Taiwan through the consumption of Taiwanese children's media and interaction with relatives from Taiwan enabled Lucy to experiences music and language from the Taiwanese culture.

Overall, the remote factors of the musical biographies of the parents and the family's connection to their home country Taiwan made an impact on Lucy's daily musical exposure and musical experiences. These factors are also regarded to be influential in shaping Lucy's musical development.

5.6.5 Macrosystem

Lucy's Macrosystem represented the cultural impacts that were embedded in the mechanism of Lucy's Micro-, Meso-, and Exosystems. These included diverse musical genres exposed to Lucy which implied multiple musical cultures, the influences from UK culture and home culture. Religion was also regarded as part of Lucy's Macrosystem as the family was a faithful Christian family.

Throughout Lucy's music-listening and music-making experiences reported by the mother as well as observed in the video recordings, it was demonstrated that Lucy experienced extensive musical genres. These musical genres included:

- English nursery rhymes
- Traditional Chinese children's songs
- Contemporary Chinese children's songs
- Disney music (Theme songs from Disney films)
- English popular songs
- English musical soundtracks
- Christmas songs
- English children's hymns
- Korean popular songs
- Japanese popular songs
- Tap-dance piano music
- Chinese rhymes

These musical genres reflected a variety in Lucy's musical exposure, which was embedded in daily social interaction between Lucy and other people and facilitated by the availability of technology and media, such as YouTube, CDs, DVDs and TV. The access to audio-visual media implied that Lucy's musical responses were socially- and culturally-

constructed, as she would imitate the dancing steps from the music videos on YouTube or from the children's DVDs. The visual aspects of music, along with its links to stories (such as Disney), further stimulated Lucy's musical imagination and cultural expression of music.

The diversity of musical genres reflected the multiple cultural influences. These included the English musical culture that Lucy experienced in the host country, such as the nursery rhymes, popular songs, festive songs, children's hymns and the songs from musicals. Lucy experienced music from an English culture through participation in local communities (school, dance studio and a local church) and the family's consumption of UK broadcasts (TV and radio). Lucy not only learnt the song repertoire but also learnt the cultural connotation and expression of music, such as the performance of Christmas songs. Furthermore, being part of Chinese diaspora in London, Lucy was also immersed in music from Chinese culture, in the Taiwanese context in particular. The music experienced by Lucy included traditional Chinese children's songs and contemporary children's songs produced by the Taiwanese children's media (Yoyo Roll Call).

The influences from the UK and Chinese cultures also reflect a bilingual nature in Lucy's sonic environment. In particular, Lucy's gradual proficiency in English was perceived by the mother to motivate her singing of English nursery rhymes and enhance her singing development (see 5.5.4). In addition to the enculturation from UK and Chinese contexts, the family's culture, which represented the musical preferences of the family members, the parenting practice and the beliefs of the parents, contributed to the uniqueness of Lucy's musical environment. The family's religion, being Christianity, had also broadened Lucy's musical exposure in the local church. The family's culture also shaped aspects of Lucy's immersion in music from UK and Chinese contexts. For instance, Lucy's exposure to and familiarity with the contemporary Chinese children's songs was the mother's choice, as she regarded the Yoyo series as a quality production and encouraged Lucy to listen to and dance to its music (also see Section 5.6.2). Therefore, the family's culture plays a key role in influencing Lucy's musical exposure and the factors in shaping her musical development.

Through the process of musical enculturation in these contexts, Lucy developed her singing and music-making abilities, musical preferences and expression through music.

5.6.6 Chronosystem

The Chronosystem considered how the passage of time and the temporal events play a role in shaping Lucy's musical development. In Lucy's case, the Chronosystem represent temporal patterns in her music-making throughout the 37 weeks, such as the continuity of the same musical behaviours throughout the diary entries due to the temporal 'prevalence'

occurring in the family. For instance, there was ‘a prevalence of princess’ (Lucy Diary [10]) in the family, in which Lucy frequently sang Disney princess songs and dressed up like a princess throughout the reported period. Furthermore, influenced by Lucy’s uncle who visited the family during the summer holiday, there was continuity of the musical game of changing lyrics around to familiar tunes, which was reported across several weeks of diary entries (e.g. Lucy Diaries [9] and [10]), and the continuity was also perceived by the mother. In general, the consideration of time demonstrated the prevalence or ‘theme’ that occurred in the family and stimulated the repetition of the same musical behaviours, although the theme might change from time to time. These temporal patterns that occurred in Lucy’s family might facilitate her musical development.

5.6.7 Summary

Through the lens of the Ecological Systems Theory, the contextual factors that might play an influential role in shaping Lucy’s musical development were conceptualised into Micro-, Meso-, Exo- , Macro- and Chronosystems, featuring the potential influences within the family context, ranging from the daily participation and social interaction within family as well as local communities to the impacts from multiple cultures that characterised Lucy’s family as part of the Chinese diaspora in London. Temporal patterns in the family that led to the continuity of reported musical activities were also considered to play a role in shaping her musical development. Each system was not bounded as an entity but aspects of each system were interrelated. This framework provided a systematic perspective from which to consider the complexity of Lucy’s musical environment which served as contextual factors of her musical development.

5.7 Summary of the chapter

This chapter presented the case study analyses of Lucy’s musical development and how the family context might shape this musical development. Examined through the SoI-EY framework, Lucy’s musical behaviours were understood in various patterns defined by domain (Reactive, Proactive, and Interactive), level (Levels 2, 3, 4 and 5), and four elements (A, B, C, and D) within each matrix of domain and level. Within individual musical instances, there were various patterns featuring single as well as multiple SoI-EY levels and/or domains. In general, Lucy’s musical behaviours concentrated on Level 5, which appeared to be consistent throughout the reported period in the Reactive domain. There was a statistically-significant shift to advanced level in the Proactive domain. In the interactive domain, there was variance among Level 3, 4 and 5 throughout the reported period. The contextual factors

of Lucy's musical development, which was conceptualised into Micro-, Meso-, Exo-, Macro- and Chrosystems, revealed that Lucy's musical development was supported through the complex interrelationships of various factors ranging from the daily participation in the family and local community to the impacts from English culture, Chinese culture and the family culture. These cultural impacts characterised Lucy's family as part of the Chinese diaspora in London.

Chapter 6: Case Study Analyses: Rina

6.1 Introduction

This chapter presents the second case study analyses that demonstrate the musical development of a child at 10 months old and how the family context as being part of the Chinese diaspora in London might play a role in shaping her musical development. Data collection was undertaken between August 2014 and March 2015. The data sources under analyses included 12 diary entries written and sent through email by the mother, three interviews with the mother, and 11 video recordings, 10 of which provided by the mother as supplementary documents to the diary account and interviews and 1 recorded by the researcher during the second interview. The diary was all typed in English and the interviews were conducted in Mandarin. The interview transcription and video transcription that were translated into English by the researcher were underlined. In order to maintain the confidentiality of the participants, the child's name 'Rina' is used as a pseudonym in this chapter.

This chapter is organised into the following sections: Section 6.2 provides the background demographic information on the family and Rina's musical experiences prior to the family's participation in this study. Section 6.3 presents the analyses of Rina's musical pathway profile, which is illustrated with the concentric circle of the SoI-EY framework. Section 6.4 provides the examples of Rina's musical behaviours conceptualised as SoI-EY domains of Reactive, Proactive and Interactive. Section 6.5 presents the longitudinal data of Rina's musical development, in which Rina's SoI-EY ratings in individual domains over a total of 32 weeks was analysed using different perspectives. In Section 5.6, how Rina's musical development might be shaped by her family context was examined through the lens of Ecological Systems framework, in which the potential socio-cultural factors were conceptualised in Micro-, Meso-, Exo-, Macro-, and Chronosystem. The chapter is summarised in Section 6.7.

6.2 Background information of Rina and her family

Rina was 10 months old when the family started participating in this study in August 2014. The family had been settled in Greater London since Rina was born. The mother, Hailey, was originally from Guangdong Province, China. She came to the UK in 2001 for university degree studies and had worked and lived in the UK ever since. The father, David, was originally from the Isle of Man. The demographic information of Rina's family is presented in

Table 6.1. At the time of the first interview, Hailey was just about to return to work from her one-year maternity leave. When it came to the languages spoken within the family, English was the language that the family spoke at home. However, when David was absent, Hailey would also speak Mandarin and Cantonese to Rina, hoping that this would enable Rina to grow up in a multi-lingual environment and experience different languages.

Table 6.1: Demographic information of Rina's family (gathered on 1st August 2014)

		Father	**Mother**
Name (pseudonym)		David	Hailey
Origin	Region	Isle of Man	Guangdong Province, China
	Language(s)	English	Mandarin, Cantonese
Age group		30-39	30-39
Highest degree		Postgraduate	Postgraduate
Current occupation		Senior Lecturer / PhD student	Finance
		Children	
Name (pseudonym)		Rina	
Age		10 months	
Gender		Girl	
Schooling		Nursery	

Rina had extensive musical experiences prior to her participation in this study. Reported by Hailey, Rina's experiences of sound and music began before she was born. When Hailey was pregnant, she listened to the Classical music of Mozart, Beethoven, Bach and Vivaldi. Hailey explained that this was for herself as well as for Rina's 'Taigyo', a prenatal education that she believed to be beneficial to the baby. Moreover, David read stories to Rina every night in the last few months of Hailey's pregnancy in order to increase the bond between the baby and the father and to familiarise Rina with the father's voice. In Rina's infancy, Hailey noticed that Rina seemed to recognise the music that she had heard before birth as she would calm down when hearing the music (Rina Interview [1]). Before she started attending the nursery, Rina was enrolled onto many musical programmes run in the community. These included a baby sign language class, in which Rina and Hailey learnt to make hand gestures while singing the English nursery rhymes, such as 'Old McDonald Had a Farm'. She also attended an English music group and a Chinese music group, both accompanied by Hailey. In these music groups held in the local community, Rina was exposed to English nursery

rhymes and Chinese children songs respectively in an adult-led group context, which enabled Rina to interact with Hailey as well as other young children and their parents.

Rina started to attend nursery from the age of 8 months old and her stay was gradually extended from one day to four days a week, attending from 8.30am to 6pm. On a typical day, Rina either was brought to the nursery or stayed at home with her mother Hailey. When Rina stayed at home, she normally got up between six and seven in the morning. Hailey set up a daily timetable for their three meals. Between the meals, Rina played with her toys or went for a nap. Rina went to bed around eight o'clock in the evening after David read a story to her. During the weekend, the family either stayed at home or had group events with relatives or friends. On Sunday mornings, the family attended the service in the local church, as they were a faithful Christian family. In the Chinese New Year period, Hailey normally took Rina with her back to China to visit her family and relatives. Hailey's mother, Mary, also came to London twice a year to look after Rina and normally stayed for two months. The family would also arrange holiday trips to other countries, such as the trip to New York, which took place during their participation in this study.

With respect to the cultural practice and values of the family, Hailey explained that, as a result of her cultural origin being Chinese, she was keen to preserve and transmit this cultural identity to Rina, as she commented, '*otherwise she does not know she is Chinese. Yes, she still has a Chinese part in her*.' (Rina Interview [3]). To do so, the family practised the iconic Chinese tradition, such as giving a red envelope to Rina and dressing her up in red during Chinese New Year and eating festive food during the cultural festivals. The learning of Mandarin was also stressed by Hailey, which led her to speak Mandarin to Rina and sing Chinese children's songs to Rina when they were alone. As the father David was of British origin and spoke English as his mother tongue, the different cultural backgrounds of the parents immersed Rina in a bilingual language environment.

6.3 Analyses of Rina's music-developmental pathway profile

Figure 6.1 demonstrates Rina's music-developmental pathway between the ages of 10M and 1Y5M. There is a total of 62 musical instances identified across all data sources, in which 80 SoI-EY ratings were generated (see Appendix 7 for the list of SoI-EY ratings). In other words, there was an average of 1.3 SoI-EY ratings within one musical instance. The individual musical instances were symbolised as ①, ②, … to ㊷ and mapped onto the concentric circle that represented the SoI-EY framework, according to their SoI-EY ratings. Figure 6.1 illustrates the distribution and complexity of Rina's musical behaviours in terms of

SoI-EY levels and domains over 32 weeks. The individual musical instances rated with multiple levels within the same domain are linked with orange lines. The individual musical instances rated with multiple SoI-EY domains are linked with green lines. Grey dashed curves represent the musical instances rated with multiple elements within the same domain and level.

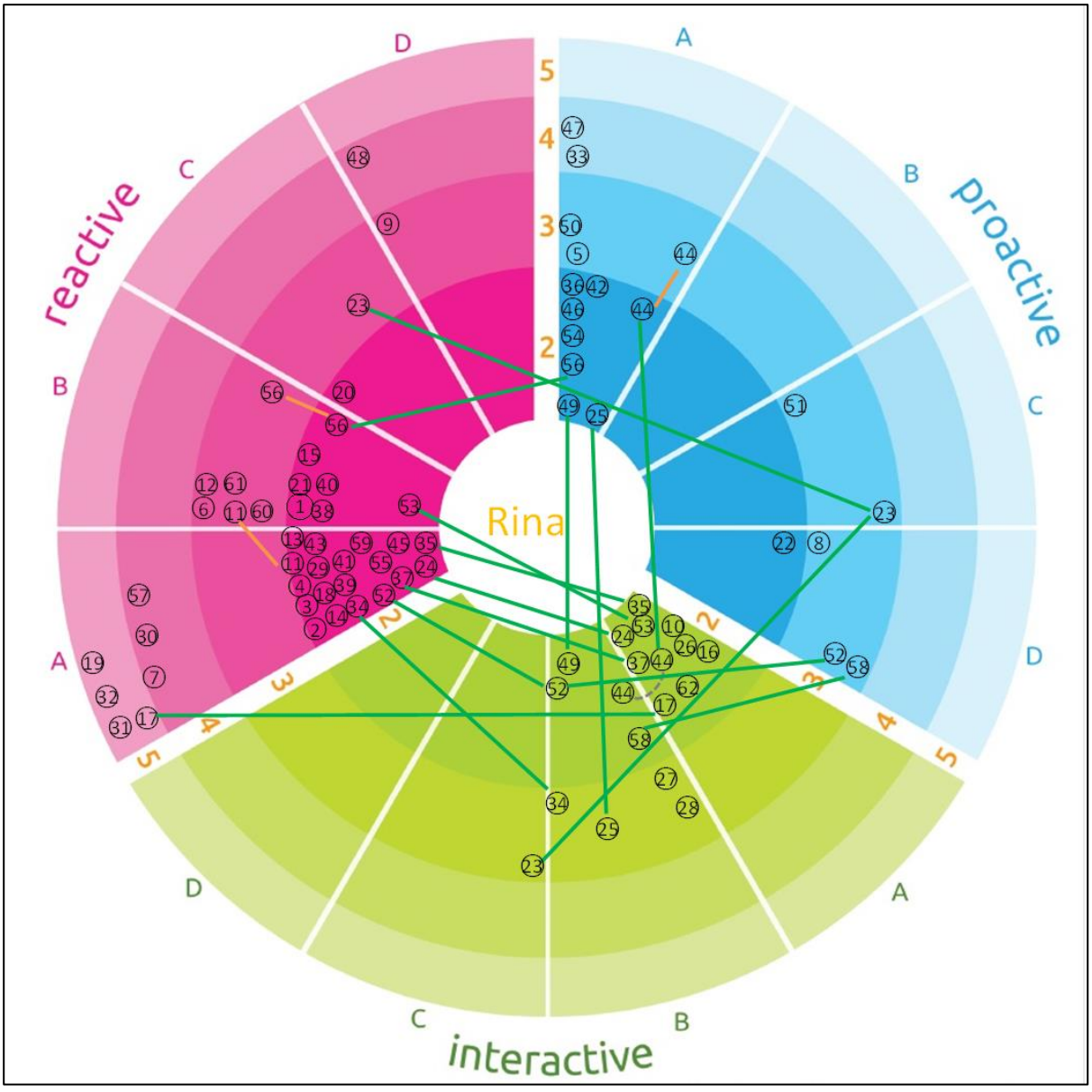

Figure 6.1: Rina's music-developmental pathway profile (Aged 10M - 1Y5M)

According to Figure 6.1, the most frequent SoI-EY rating determined by Domain, Level, and Element is 'R2A' – *respond to increasing variety of sounds*, which accounted for 19 times. Other frequent SoI-EY ratings included 'I2A' – *respond to others' sounds by making their own* (10 times) and 'P2A' – make sounds using voices, bodies, or objects (7 times). There was one instance of multiple elements within the same domain and level (I2A and I2B). This demonstrates that, in this musical instance, Rina responded to others' sounds by making her own sounds while expecting others to respond to her sound-making.

In terms of the distribution of the Domain-Level matrix without taking Element into account, Table 6.2 further displays the frequency of different combinations of domain and level. Table 6.2 shows that, in general, Rina's reported musical behaviours embraced Level 2, and there were less musical behaviours rated as the level increased. Moreover, among all Level 2 musical behaviours (49 times), the Reactive domain takes up the majority of ratings (27 times), compared with the musical behaviours in the Interactive (13 times) and Proactive (9 times) domains. Although there are less musical behaviours observed at upper levels in general, there are a number of Level 4 musical behaviours rated in the Reactive (4 times) and Proactive (2 times) domains and Level 5 musical behaviours in the Reactive domain (4 times). This demonstrates that Rina had the musical ability to attend to and respond to the whole pieces of music before even being able to perform them independently or with others. Rina's Interactive musical behaviours were rated at Levels 2 and 3, demonstrating that she interacted musically with others by using sounds, sometimes with simple patterns. Figures 6.2a and 6.2b demonstrate the distribution of 80 SoI-EY ratings by level and domain respectively. Figure 6.2a shows that Levels 2 and 3 took up over 90% of all of the SoI-EY ratings, with 61% for Level 2 and 28% for Level 3 respectively. Figure 6.2b shows that the Reactive domain accounts for over 50% of all of the SoI-EY ratings, while the Proactive and Interactive domains share the same percentage of just under a quarter (23%) of the SoI-EY ratings.

Table 6.2: The frequency of different matrices of domain and level across Rina's 62 musical instances

	Reactive	Proactive	Interactive	Total
Level 2	27	9	13	49
Level 3	8	8	5	21
Level 4	4	2	0	6
Level 5	4	0	0	4
Total	43	19	18	80

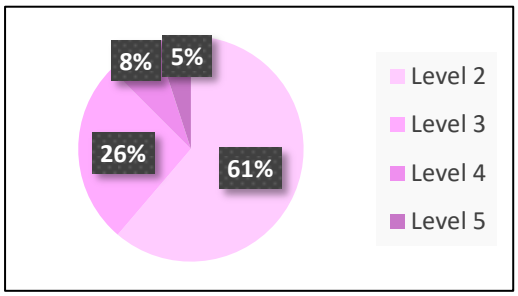

Figure 6.2a: Percentages of Rina's musical behaviours by SoI-EY level

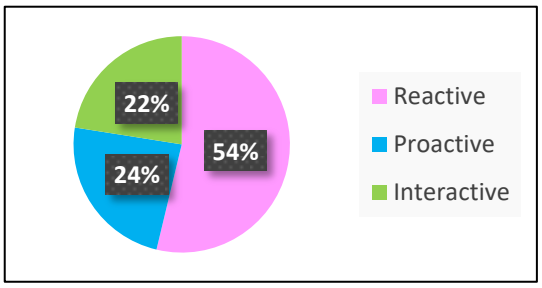

Figure 6.2b: Percentages of Rina's musical behaviours by SoI-EY domain

Figure 6.1 also demonstrates the complex combination of the SoI-EY domains and levels within individual musical instances. There were two musical instances rated with multiple levels within the same domain, including one instance rated at Levels 2 and 3 in the Reactive domain (⑪) and one instance rated at Levels 2 and 3 in the Proactive domain (㊹). The musical instance ⑪ demonstrates that Rina responded to the sounds through bodily movement and facial expressions, with her movement synchronising with the beats. The musical instance ㊹ demonstrates that Rina was able to make patterned sounds in her sound exploration activity. Furthermore, there are individual musical instances rated with multiple domains, including Reactive + Interactive (6 times), Proactive + Interactive (4 times), and Reactive + Proactive + Interactive (2 times). This combination of multiple domains demonstrates that, in terms of the musical instances with multiple domains, Rina's Reactive and Proactive musical behaviours always accompanied the Interactive musical behaviours, which represented musical interactions taking place in these musical instances.

6.4 Examples of Rina's musical behaviours

6.4.1 Reactive musical behaviours

Rina was very responsive to sounds and music. She was experiencing a wide range of musical types, including nursery rhymes, Western Classical music, church music, jazz, popular music and the recorded music emanating from her electronic toys. In the home environment, the music was played from various musical sources, such as YouTube, CDs and the musical toys. In addition to the home environment, she also responded to music in other places, such as the friends and relatives' places, the nursery, and the local baby

concert sessions. Furthermore, the language exposure of English, Mandarin and Cantonese also comprised her daily sonic experiences. Overall, Rina was growing up in an environment that was rich in musical stimuli.

Rina responded to music in various ways, including wiggling or twisting her body, shaking her bottom, tapping her fingers, smiling, laughing and staying quiet. The majority of her Reactive musical behaviours were rated at Level 2, demonstrating her awareness of and responses to a variety of sounds. The following examples demonstrate the variety of Rina's musical exposure and her musical responses:

> *Rina were dancing (shaking her bottoms and wiggling) with the Mama Mia songs when she first time heard them. It was very obvious she enjoyed the uplifting music.* (Rina Diary [6], ㉙ – R2A)

> *Rina was also exciting when listening to Vivaldi's Four Seasons at lunch. She nodded and wiggled with big smiles when the violin emerged in movement 3 of Presto in Summer (Concerto No.2 in G minor).* (Rina Diary [1], ⑬ – R2A)

> *We were all listening to the jazz and clapped with the beats and melody. Big smiles on her face lightened up the room and we knew she enjoyed the jazz as much as we do!* (Rina Diary [1], ⑭ – R2A)

> *Rina is very quiet at bed time when baby Mozart is on very low volume. Most of the Mozart and Bach are the music I have listened to during pregnancy. I noticed these classical music [examples] calmed her down when she was very little.* (Rina Diary [1], ⑮ – R2B)

> *I mainly speak Mandarin to her, sometimes Cantonese, but English when she is being naughty…when I speak in a serious tone, I think she can distinguish the tones, and she would be serious for a second, and laugh.* (Rina Interview [1], ① – R2B)

Furthermore, Rina was particularly responsive to certain sounds and music, such as music with uplifting features or any sounds new to her:

> *She is very responsive to anything that makes noises, such as toys, musical instruments like xylophone, saucepan and [specula]. Rina reacts very quickly to new types of noises and is very investigative.* (Rina Diary [3], ㉑ – R2B)

In addition to the Level 2 musical behaviours, Rina also responded to simple musical patterns, such as the beats of music, which represented her Reactive musical behaviours at

Level 3. In a few instances, her musical responses were rated at multiple levels across 2 and 3:

> *She is learning to walk at the moment by holding our hands. I hummed the Un elephant qui se balancait to her, and she stepped forward with each of the note[s] of the song and nodded to the music!* (Rina Diary [1], ⑫ – R3B)

> *We had been listening to French nursery rhymes these few weeks. The second time we listened to Un elephant qui se balancait, Rina was moving to the beats of the music. She started [to] wiggle with the rhymes and smiled at us when she moved.* (Rina Diary [1], ⑪ – R2A&R3B)

> *When sitting on the toy car, Rina responded distinctly to the songs of different characteristics. She waved her arms to the slower song, and nodded her head to another song which had strong beats.* (Rina Video [12], ㊺ – R2B&R3B)

Rina was able to attend to musical pieces and recognise and respond to longer fragments of music, which represented her Reactive musical behaviours at Levels 4 and 5. For instance, her familiarity with the tunes was evident when she remembered the corresponding hand gestures for the song:

> *She not only claps her hands when we are singing ' if you[‘re] happy and you know it clap you hands', also she tries to hold my hands to clap mine.* (Rina Diary [8], ㊽ – R4D)

Furthermore, Hailey noticed that the familiarity with music helped with Rina’s emotional regulation:

> *Every time when she was moody or grumpy I dance with her to the song ' when she comes round the mountain' [and] she will burst into laughs!! It was fun to see and dance together.* (Rina Diary [6], ㉚ – R4A)

> *This week I took her to Classical Babies concerts for Bach. She seems very quiet to listen to the musician and investigate the instruments, e.g. violin.* (Rina Diary [6], ㉜ – R5A)

With the concentration on musical pieces, Rina was reported to have musical preferences, such as her favourite composers and songs:

> *She doesn't seem like Bach or Strauss as much as Mozart and Vivaldi. From what I observed, she would initiate the wiggling and smiles a lot whenever hearing the music*

from the latter two composers. She also listens to a lot of Beatles songs thanks to the musical taste of her Dad. She loves 'Hey Jude' etc. (Rina Diary [6], ㉛ – R5A)

I also notice she starts to hum some random noise when we listen to songs. Two of her favo[u]rite songs are Brave by Sara Bareilles and 500 miles by Proclaimers. (Rina Diary [2], ⑰ – R4A&I2A)

We have continuously sung the French nursery [rhyme] when we were traveling. I feel the upbeats of the rhythm and [the] familiarity of songs comfort her in[a] new environment to let her feel secure. (Rina Diary [2], ⑲ – R4A)

Overall, Rina was responsive to sounds and music in a variety of ways as judged by her body movements, vocalising and facial expressions. While new sounds aroused her curiosity, music seemed to regulate her emotional state as she cheered up with uplifting music and calmed down with baby Mozart. The music familiar to Rina also seemed to have a calming effect. With her musical ability to concentrate on musical pieces, Rina was also developing her musical preferences, as she demonstrated particular interests in certain Classical music (Mozart and Vivaldi in particular) and popular music such as Beatles' songs.

6.4.2 Proactive musical behaviours

Rina was a confident sound-maker and sound-explorer. She was reported to explore sounds in a variety of ways, such as vocalising, tapping with her fingers, banging objects on the floor, pressing buttons on a toy and playing on a musical instrument. The sound-making objects ranged from ready-made or home-made percussion (Figure 6.3) to an instrument such as the piano (Figure 6.4).

Figure 6.3: Rina was shaking a hand-made percussion to make sounds (Rina Interview Video [2])

Figure 6.4: Rina was playing on a piano during a playdate (Rina Video [9])

Rina's Proactive musical behaviours were mainly rated at Levels 2 and 3, which represented her musical ability of vocalising and making sounds, with an increasing skill making simple musical patterns. The following musical instances showed the examples of her vocalising and sound-making activities at Level 2, which were sometimes integrated with other sensory inputs:

> *Sometimes she even initiate[d] the singing without any music to prompt her.* (Rina Diary [7], ㊱ – P2A)

> *Most of the time, she can confidently play the musical drum, bells, percussion, and xylophone herself. She just picks up the instruments and plays without anyone prompting her to.* (Rina Diary [8], ㊻ – P2A)

> *She had a fantastic Chinese New Year with the family in China. […] She climbed into a toy car and fastened the seat belt herself […] Unlike other same age kid in China, she touched all the buttons in the car to explore all the differen[t] noises and functions.* (Rina Diary [12], ㊹ – P2A)

> *She is very fond of the sound books at the moment. When we read Peppa Pig sound book to her, she tried to turn the pages herself and pressed different sound buttons, just like what we did to her [sic] whilst reading.* (Rina Diary [3], ㉒ – P2D)

Rina's vocalising and sound-making activities with simple musical patterns, which represented her Proactive musical behaviours at Level 3, were demonstrated when she vocalised or made sounds with the objects. For instance, in a video recording, Rina was vocalising melodies with a musical pattern of minor third (see the transcription in Figure 6.5)

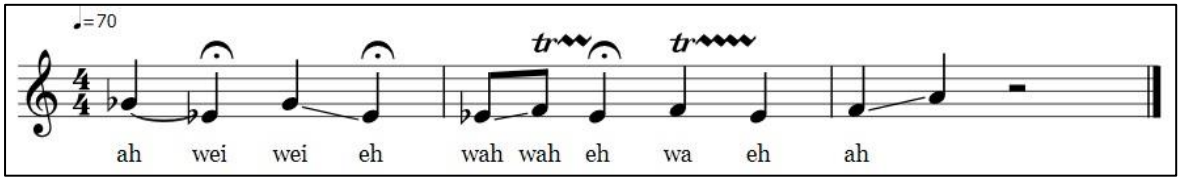

Figure 6.5: Transcription of Rina vocalisation (Rina Video [10]-1)

In addition to the musical pattern of the repeated intervals, Rina also made simple rhythmic patterns by shaking the percussion instruments or playing on another instrument:

> *Rina was shaking a milk bottle with beans inside. She shook it for three times in steady beats.* (Rina Interview Video [2], ㊷ – P3A)

> *Rina was exploring the sound of the piano by playing and banging on it. She banged on the keyboard rhythmically (repetitively banging three or four times and stop).* (Rina Video [9], ㊿ – P3A) (also see Figure 6.4)

Furthermore, Rina began to make meaningful sounds to symbolise things, which also represented her Proactive musical behaviours at Level 3:

> *When she was little, I rang [the bell] as a symbol of meal time. In [sic] one occasion, she didn't want to eat anymore, she took [the bell] and shook it very loudly. It was hilarious.* (Rina Interview [1], ⑧ – P3D)

> *[Rina] played pee[k]-a-poo with Auntie at the [dining] table which was fun to watch.* (Rina Diary [12], ㊽ – P3D&I2B)

At the later stage of participation, it was reported that Rina made a progression in singing, which was more recognisable than before. Her musical ability of being able to hum recognisable tunes, which Hailey noted was based on the clearer rhythms, represented her Proactive musical behaviours at Level 4.

> *She sings a lot to us now- most of the time we couldn't make out what that was, but a few times we knew she was intimating rhythms and songs we normally sing to her.* (Rina Diary [6], ㊸ – P4A)

She also sings to me the rhythms that are more recognisable than the random notes she was making before, like 'the wheels on the bus'. (Rina Diary [8], ㊼ – P4A)

Overall, Rina's Proactive musical behaviours demonstrated that she was able to make sounds with simple musical patterns, and she could also hum the recognisable tunes, possibly due to the familiarity with the songs. Rina also had learnt the social meaning of sounds and musical games and was making sounds in a social context, such as during the family routine and playing games with relatives.

6.4.3 Interactive musical behaviours

Rina had musical interactions with people surrounding her as well as various media. As reported in the diary as well as observed in the video recording, Rina had vocal interaction with Hailey, in which the musical aspects of her vocalisation were demonstrated. Rina also vocalised or made sounds in response to recorded music that was played from the musical devices in the home environment, such as YouTube and CDs. In addition to the family home, Rina also had musical interaction in other contexts, such as the singing time in the nursery and a piano experience at a friend's place. Rina's Interactive musical behaviours were mainly rated at Level 2, which demonstrated her ability to use sounds to interact with others. There were also a few musical instances in which Rina was copying simple musical patterns, which represented her Interactive musical behaviours at Level 3.

Rina responded to music by humming or tapping her fingers along with music. She was also reported to show an interest in playing on the piano after watching other people playing. The following instances demonstrated Rina's musical interaction with the use of her vocalisations and body and various objects:

I also notice she starts to hum some random noise when we listen to songs. Two of her favo[u]rite songs are Brave by Sara Bareilles and 500 miles by Proclaimers. (Rina Diary [2], ⑰ – R4A&I2A)

In the circle of music play at the nursery, I was told that she [imitated] some actions from the teachers and tried to join in the singing. [...] They commented how cute it was. (Rina Diary [5], ㉖ – I2A)

One day at lunch, she flicked over the plastic plate after finishing all the food, and started to tap her little fingers on the plate to drum. (Rina Diary [2], ⑯ – I2A)

One day we went to Debby's home, and Debby was playing the piano. [Rina] didn't want to leave, she insisted on playing [on the piano]. (Rina Interview [3], ㉜ – I2A)

Furthermore, a video recording also demonstrated the musical interaction between Rina and Hailey. In the video, Rina made sounds with the wooden percussion and a hand-made shaker after seeing Hailey's playing on the same wooden percussion (Rina Interview Video [2], Figure 6.6)

Figure 6.6: Rina was having musical interaction with Hailey (Rina Interview Video [2])

Rina was able to copy the sounds in a deliberate way. A video recording demonstrated the vocal interaction between Rina and Hailey. In the video, Rina and Hailey were copying each other's vocalisation and took turns in vocalising, and thereby a dialogue was generated:

> *Rina was sitting on a highchair at the dining table. She was vocalising three musical phrases with the vowel 'ah', each phrase containing a descending feature in wavering pitches. Her head, arms and legs were wiggling along with the wavering of her vocalisation. Hailey copied her vocalisation. Rina looked at Hailey, and initiated the new vocalisation of 'bah bah bah'. Hailey vocalised 'gu du gu du gu du', which made Rina smile while putting her finger in her mouth. Rina vocalised descending sounds with wavering pitches again. Hailey asked Rina, '妳吃飽啦? 妳吃飽了就在跳舞了嗎?' [Are you full? Are you dancing when you are full?] Rina vocalised in response to Hailey's questions.* (Rina Video [3], ㉓ – R3C&P3C&I3C)

The musical instance above not only showed Rina's musical response to Hailey's vocalisation, it also demonstrated that Hailey was taking an active role in copying Rina's vocalisation, which seemed to stimulate Rina's attempt to produce new vocalisation.

It was reported that Rina was trying to copy some notes of the songs, ranging from a nursery rhyme sung by Hailey to a popular song heard on the radio:

> *I was singing 'Old McDonald has a farm' to her and she tried to copy some notes.* (Rina Diary [5], ㉗ – I3B)

Last week, on the way home from the nursery, Rina was singing to Adele's 'Someone like you' played in [sic] the radio […] From her singing I could tell she was enjoying it and happily intimating the tune and the singing. (Rina Diary [7], ㉞ – R2A&I3B)

Moreover, a video clip also showed that Rina was copying the partial tonal feature of Hailey's singing while playing with toys at the same time. Figure 6.7a showed the melody of Hailey's singing, and the tonal feature in the grey rectangle was briefly copied by Rina's singing, which is shown in Figure 6.7b. It demonstrated that Rina was briefly copying the contour patterns and the tonal range of Hailey's singing.

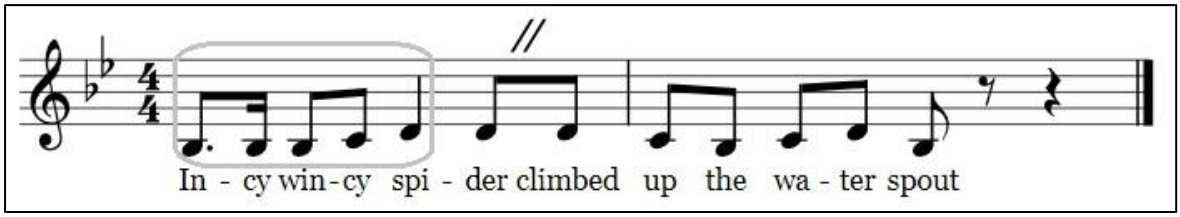

Figure 6.7a: The notation of Hailey's singing (Rina Video [5])

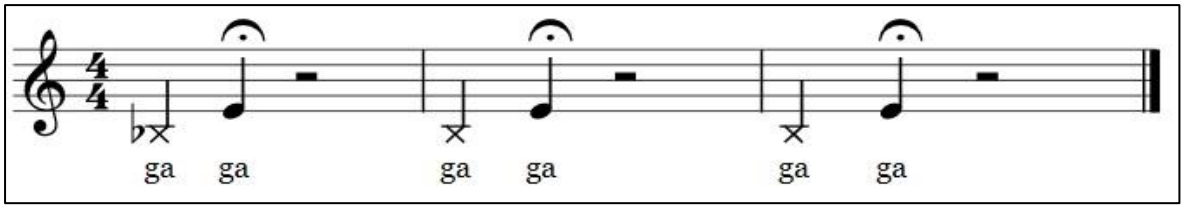

Figure 6.7b: The notation of Rina's singing in response to Hailey's singing (Rina Video [5])

In general, Rina's Interactive musical behaviours were characterised by vocal interaction between her and the mother Hailey, although there were also musical instances demonstrating the interaction of sound-making activities. Hailey seemed to play an important role in the processes of these musical interactions, as her immediate responses to Rina's vocalisation or sound-making activities formed a musical interaction, which stimulated Rina to imitate or take the initiatives of vocalising/sound-making while anticipating Hailey's musical response.

6.5 Analyses of Rina's musical development

The following sections present analyses of Rina's musical development between the ages of 10M and 1Y5M from different perspectives. The analyses were based on the n=80 SoI-EY ratings that were coded by the researcher according to the musical instances reported by the mother through diary entries and interviews, as well as observed by the researcher in 11 video recordings (10 provided by the mother, 1 filmed by the researcher). The total reported

data collection period spanned 32 weeks, and the analyses were undertaken on a weekly basis from the day of the first interview, which is regarded as week 0. In addition to week 0 that represents the first interview, there were data entries on weeks 3, 5, 7, 9, 11, 13, 16, 18, 21, 23, 26 and 32 throughout the reported period. Sections 6.5.1, 6.5.2 and 6.5.3 present the longitudinal data of weekly SoI-EY levels within each domain. Section 6.5.1 demonstrates the frequencies of SoI-EY ratings at different levels throughout the reported period; Sections 6.5.2 and 6.5.3 present the line charts and scatter plots of weekly mean score of SoI-EY levels over the reported period, demonstrating the variance and overall trends of Rina's development respectively. Table 6.3 presents the weekly mean score by each domain. In each domain, the mean score in individual weeks was generated by the sum of the levels divided by the number of the ratings. Section 6.5.4 reports the evidence of Rina's musical development as perceived by the mother. The different analytical perspectives seek a comprehensive understanding of Rina's musical development.

Table 6.3: Rina's weekly average score in each domain

Week	Reactive	Proactive	Interactive
0	2.57	3	2
3	2.33		
5	3.5		2
7	2.5	2.5	3
9	2	2	2.5
11			2.67
13	4	4	
16	2	2.25	2.25
18	3	2.67	2
21		3	
23	2	3	2
26	2		2
32	2.71	2.5	2

6.5.1 The frequencies of Rina's musical behaviours over time

Figures 6.8a, 6.8b and 6.8c show the frequency of Rina's reported musical behaviours in the Reactive, Proactive and Interactive domains respectively over 32 weeks (from 10M to 1Y5M). Figure 6.8a demonstrates that, in the Reactive domain, there were Level 2 musical behaviours of various frequencies throughout the 32 weeks, with week 16 reaching a peak of 8 times when more Reactive musical behaviours were reported during the second interview with Hailey. There were occasional musical behaviours rated at Levels 3, 4 and 5 in different weeks, with Level 5 musical behaviours in weeks 5, 13 and 32, demonstrating that Rina

attended to and recognised whole songs from when she was about one year old. However, this was not as frequent as the musical behaviours that were rated at the lower levels. Figure 6.8b shows that Rina's Proactive musical behaviours clustered around Levels 2 and 3, with two instances being rated at Level 4 when Rina was over one year old. The distribution of the ratings indicates that Rina made a variety of sounds throughout the reported period, sometimes with a patterned feature and occasionally with a recognisable tune. Figure 6.8c illustrates Rina's Interactive musical behaviours as being mainly rated at Level 2 throughout the reported period, with Level 3 musical behaviours reported in the first half of the time span. The absence of the Level 3 Interactive musical behaviours in the second half of the time span might be related to the mother Hailey returning to work after her one-year maternity leave, which left her with less time to interact musically with Rina. In general, Figures 6.8a, 6.8b and 6.8c suggest a relative constancy in Rina's musical behaviours at lower SoI-EY levels of 2 and 3, with occasional musical behaviours at higher levels 4 and 5, especially in the Reactive domain.

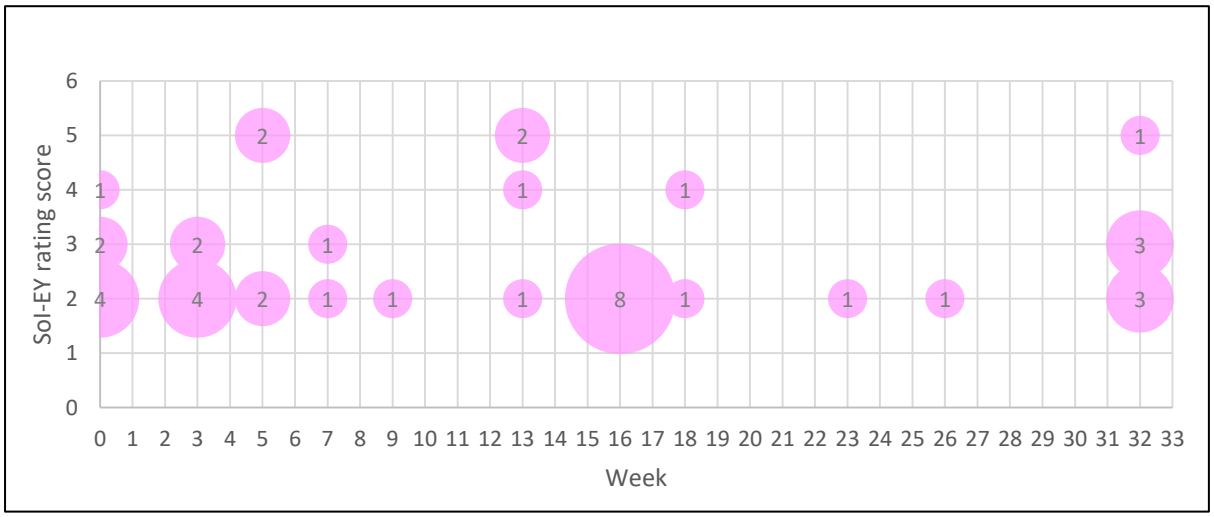

Figure 6.8a: The bubble chart of Rina's musical behaviour in the Reactive domain

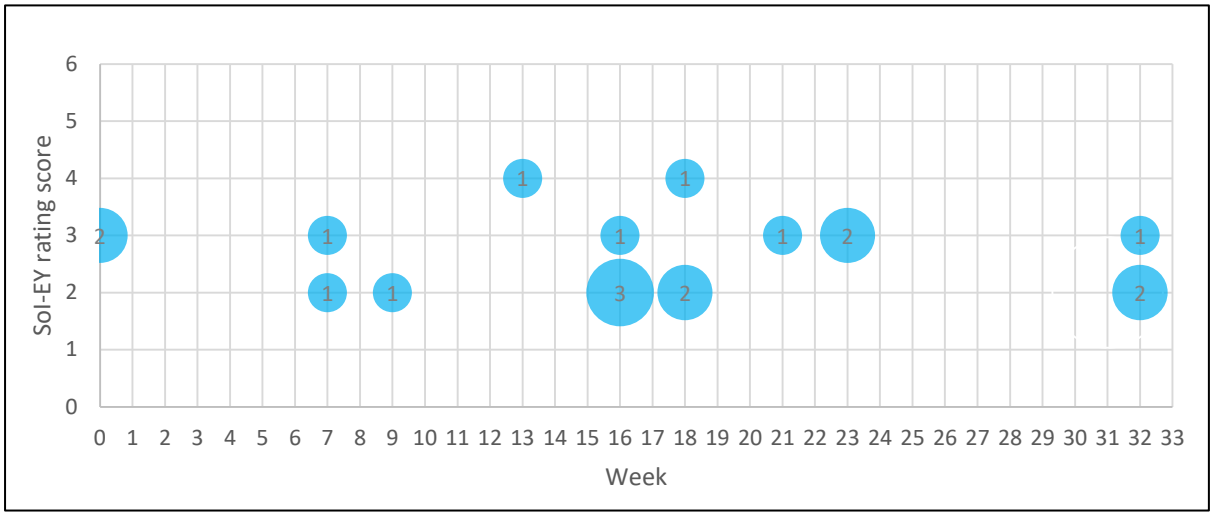

Figure 6.8b: The bubble chart of Rina's musical behaviour in the Proactive domain

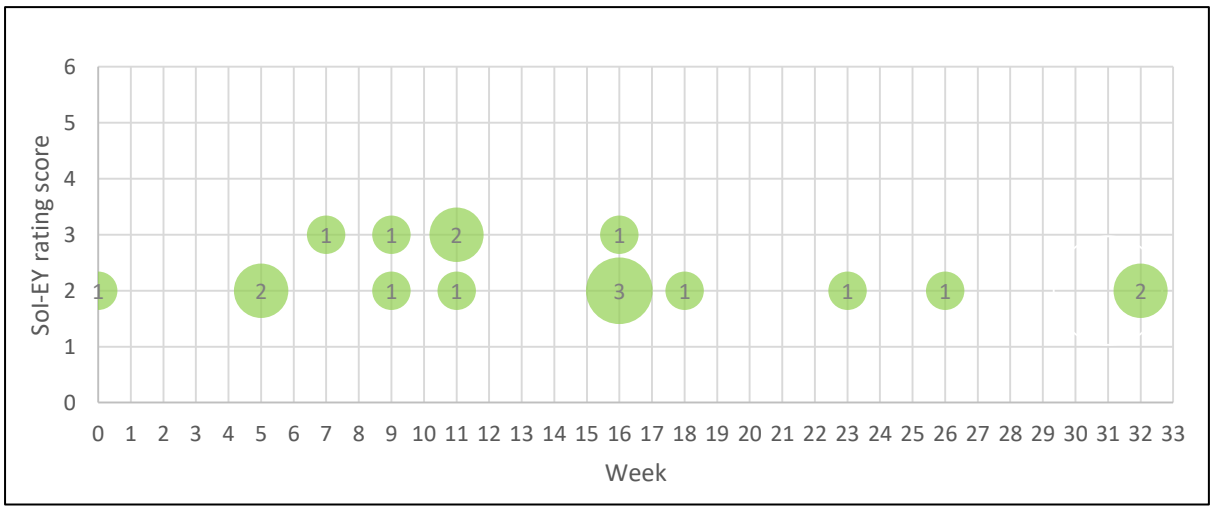

Figure 6.8c: The bubble chart of Rina's musical behaviour in the Interactive domain

6.5.2 The average levels of Rina's musical behaviours over time

Based on the mean score of weekly SoI-EY level (Table 6.3), Figures 6.9a, 6.9b and 6.9c illustrate the average levels of Rina's musical behaviours in each week over 32 weeks of the reported period. Figure 6.9a shows that the average level of Rina's Reactive musical behaviours fluctuated between Levels 2 and 4, with higher mean scores in weeks 5 and 13, in which Rina was reported to get familiar with a song that Hailey frequently sang to her (Rina Diary [2], ⑲ – R5A), had her favourite songs (Rina Diary [2], ⑰ – R5A) or musical styles (Rina Diary [6], ㉛ – R5A) and showed concentration on the music played in the baby concert (Rina [6], ㉜ – R5A). Rina's Reactive musical behaviours of a higher level seemed to be related to the frequent exposure to the same songs and the social context that facilitated her concentration on listening, such as in the baby concert. Figure 6.9b demonstrates that the average level of Rina's Proactive musical behaviours was constantly at Level 3 over the reported period, with a notable increase in week 13, in which her singing was described as *'[imitating] rhythms and songs we normally sing to her*' (Rina Diary [6], ㉝ – P4A) without other Proactive musical behaviours at lower levels being reported. The increase in the Proactive level was likely to be an outcome of Rina's familiarity with songs due to frequent exposure. Figure 6.9c illustrates that the average level of Rina's Interactive musical behaviours had a steady presence at Level 2 throughout 32 weeks, although there were increasing levels between weeks 5 and 11, in which the reported musical instances were mainly in the context of Rina's imitation of Hailey's singing (e.g. Rina Diary [5], ㉗ – I3B). The decrease of the Interactive level after week 11 might be due to the mother Hailey returning to work, which gave Rina fewer opportunities for such musical interaction. Overall, there are variations of average SoI-EY level throughout the reported period, particularly in the Reactive domain. This demonstrated that Rina exhibited the Reactive musical behaviours at a wide range of levels, compared to Proactive and Interactive domains. In the Interactive domain, the higher point scores were located at the earlier stage of the reported period, possibly due to the decreasing time for musical interaction between Rina and Hailey, as she returned to her full-time work after maternity leave.

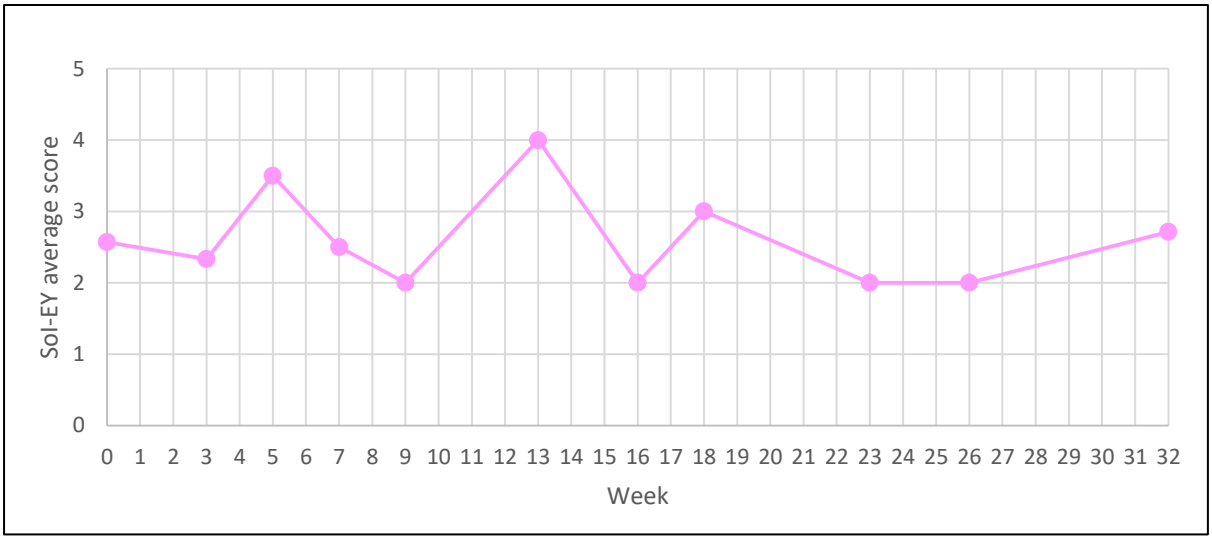

Figure 6.9a: The line chart of Rina's musical development in the Reactive domain

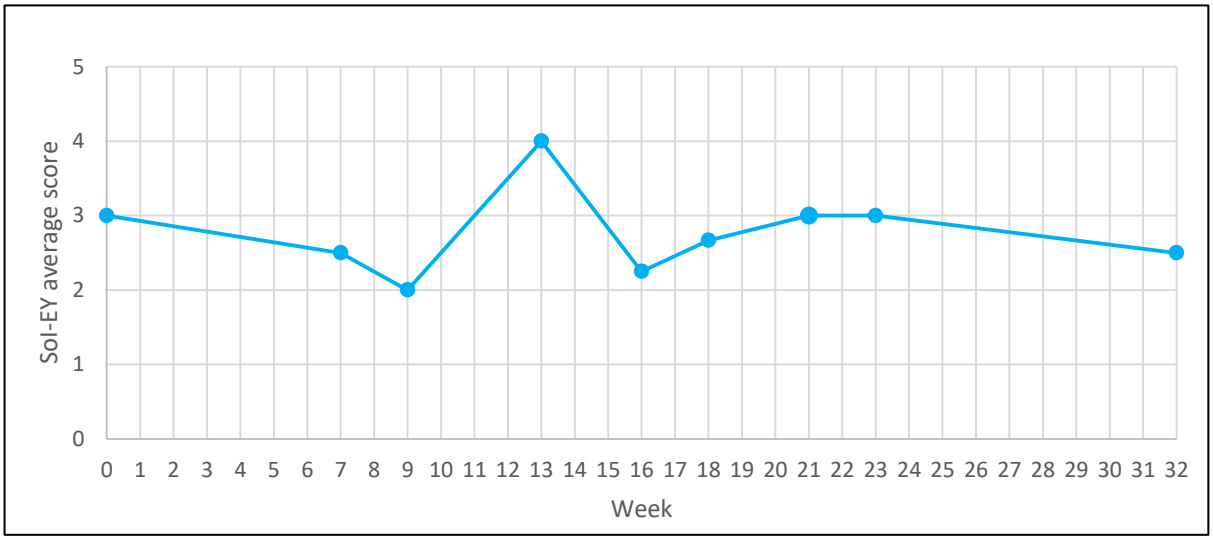

Figure 6.9b: The line chart of Rina's musical development in the Proactive domain

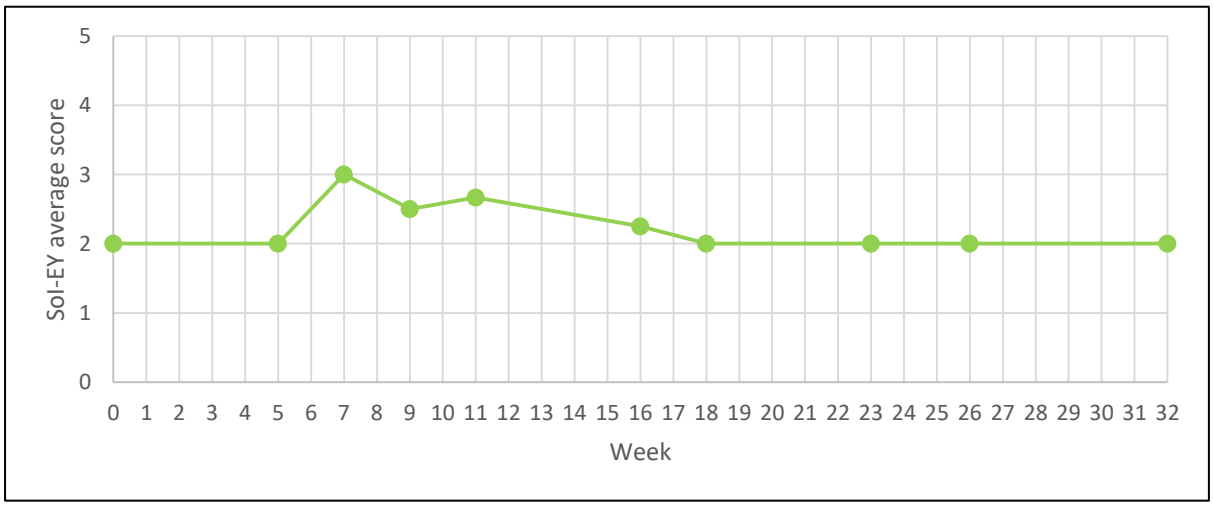

Figure 6.9c: The line chart of Rina's musical development in the Interactive domain

6.5.3 The correlation analyses of Rina's musical behaviours over time

Based on the weekly mean score that represents the weekly average SoI-EY level (Table 6.3), Figures 6.10a, 6.10b and 6.10c illustrate the trendlines that indicate the general direction of progress of Rina's SoI-EY levels over the reported period. In Figure 6.10a, the trendline of the Reactive domain shows a slight decrease between Levels 2 and 3 (R^2=0.0342), although there are point scores of various levels throughout the reported period. In Figure 6.10b, the trendline of the Proactive domain demonstrates stability at just under Level 3 (R^2=0.0009). In Figure 6.10c, the trendline of the Interactive domain demonstrates a slight decrease to Level 2 towards the end of the reported period (R^2=0.1486). The decrease of the trendlines in the Reactive and Interactive domains were possibly due to less musical exposure for Rina and fewer opportunities for Rina to be engaged in musical interaction in the later stage of the reported period. The correlation analyses demonstrated that there was no significant correlation between the SoI-EY mean score and the passage of time in all of the Reactive ($r = -0.185$, $n = 11$, $p = 0.586$), Proactive ($r = -0.03$, $n = 9$, $p = 0.939$), and Interactive ($r = -0.385$, $n = 10$, $p = 0.271$) domains. This might be due to the nature of the various levels of musical behaviours to be reported by the mother throughout the 32 weeks and the insufficiency of the time span that allowed Rina's music-developmental growth to be monitored. This might also be due to the contextual factors that offered fewer opportunities for Rina to be engaged in music, such as the end of Hailey's maternity leave in the middle of their research participation.

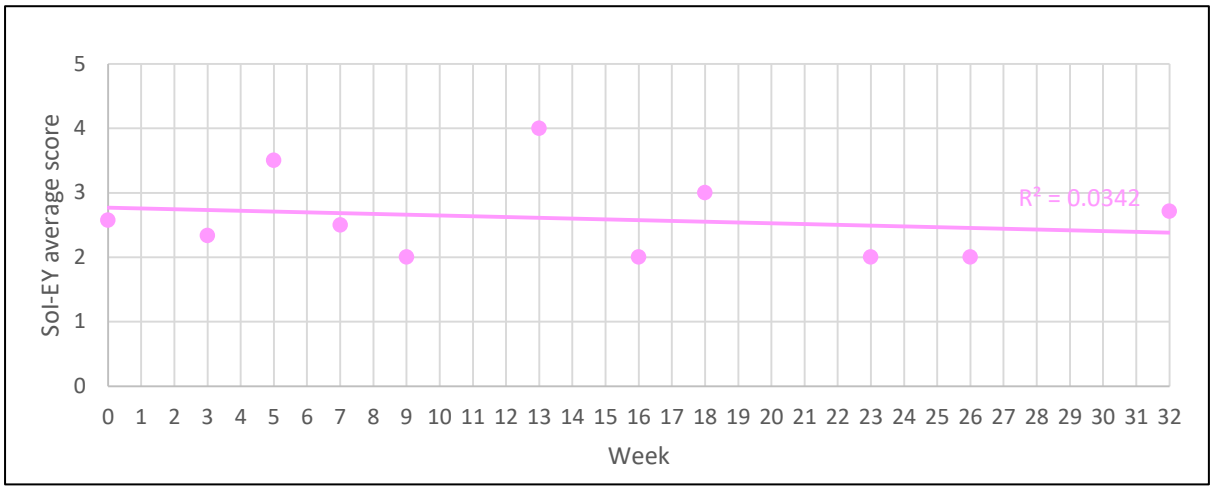

Figure 6.10a: The scatter plot of Rina's musical development in the Reactive domain

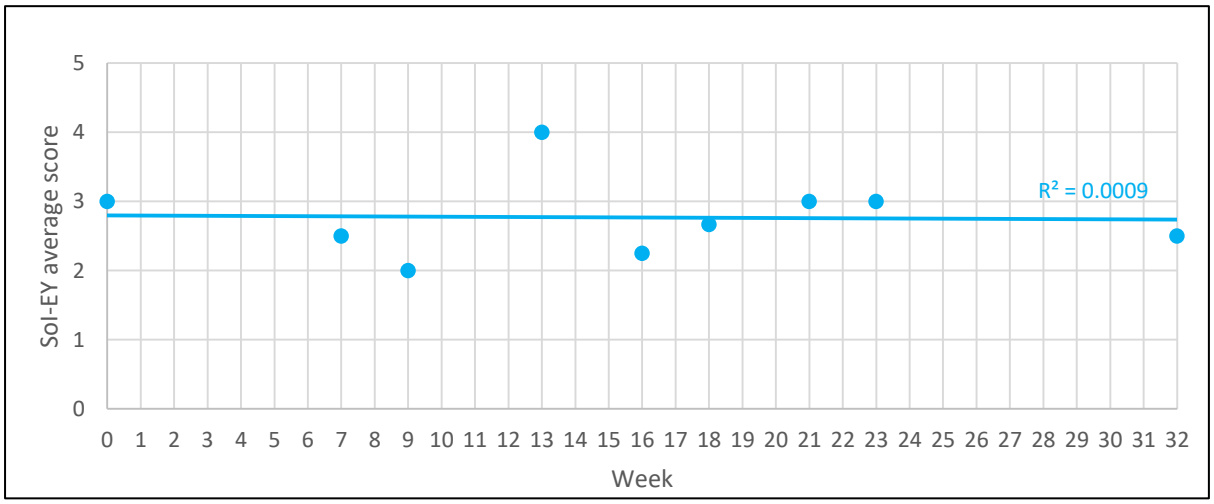

Figure 6.10b: The scatter plot of Rina's musical development in the Proactive domain

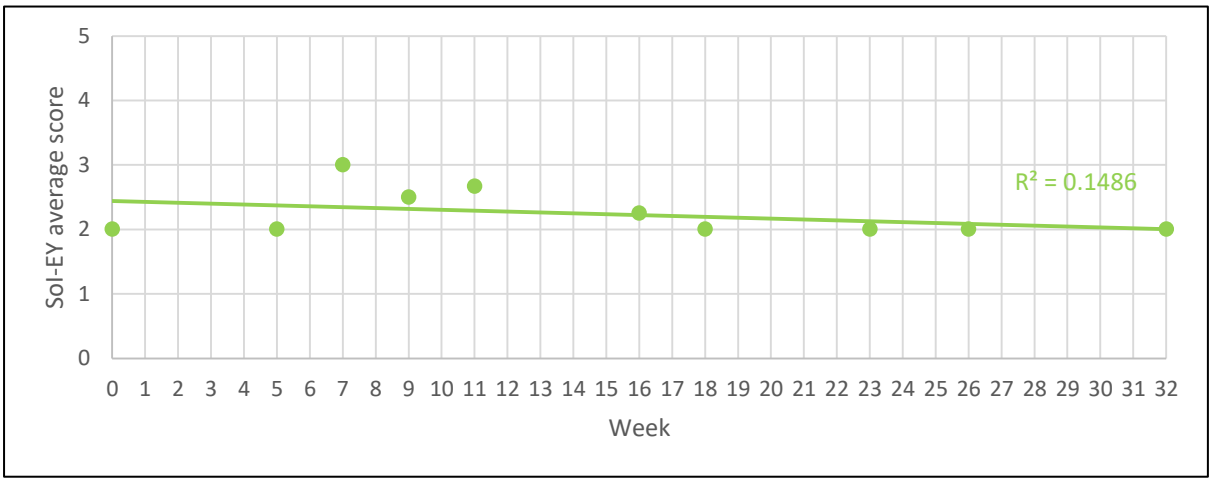

Figure 6.10c: The scatter plot of Rina's musical development in the Interactive domain

6.5.4 The musical development perceived by the mother

In addition to the analyses of Rina's SoI-EY ratings over time, the description from the mother regarding aspects of Rina's musical progress was also analysed through the lens of the SoI-EY framework in order to gain a comprehensive understanding of Rina's musical development.

It was frequently reported that Rina learnt the musical behaviours through imitating others. Rina copied how to respond musically, as well as how to sing from the other adults, but she would also add her own creations:

> *I don't know how she picks up those movement [to music]. Maybe she saw it before when I twisted with the music, which was long time ago. Amazingly she remembered it and add[ed] in some of her own created movement.* (Rina Diary [11])

> *She sings a lot to us now- most of the time we couldn't make out what that was, but a few times we knew she was [imitating] rhythms and songs we normally sing to her. That's so sweet and priceless.* (Rina Diary [6])

> *When we read peppy pig sound book to her, she tried to turn the pages herself and pressed different sound buttons, just like what we did to her whilst reading*. (Rina Diary [3])

The above instances demonstrated that Rina's musical behaviours seemed to be an imitation of her previous experiences of musical exposure and interaction with other adults. Her good memory was perceived to be critical in this process. Through the lens of the SoI-EY framework, Rina's development of her Reactive and Proactive musical behaviours was formed by her memory and imitation of other people. The momentary musical interaction of Interactive musical behaviours, which is regarded to be a facilitator of music learning, was not reported by the mother in this musical progression, as she emphasised Rina's good memory to be the key role in her learning of responses to music , singing and sound-making.

Furthermore, when being asked about the musical development throughout the six months, Hailey highlighted the increase in vocabulary that Rina would use in her communication with others and the development of Rina's sociable character, which Hailey thought would provide more opportunities for Rina to be engaged in musical interaction with others. Furthermore, it was reported that throughout the research participation, Rina became enthusiastic about dancing, which Hailey attributed to Rina's own initiation of dancing that created a mutual interaction of dancing between Rina and other adults in a joyful atmosphere (see 6.6.2.2 for an example). Through the lens of the SoI-EY framework, Rina's

Proactive musical development was perceived to be related to her language development. In addition, Rina's Reactive musical behaviours were enhanced by her own musical responses in the context of social interaction with various people and places. In other words, Rina played an active role in enhancing her Reactive musical behaviours through positive social interaction with other people.

6.5.5 Summary

This section explored Rina's musical development from different analytical perspectives. Through the examination of Rina's SoI-EY ratings in terms of their frequencies and weekly mean score over 32 weeks, the findings indicated variations of SoI-EY levels in Rina's Reactive musical behaviours and stability at lower levels of 2 and 3 in the Proactive and Interactive domains. The decreasing trendlines of SoI-EY levels in the Reactive and Interactive domains indicated the lower levels of reported musical instances in the later stage of the family's research participation, possibly due to less musical exposure provided to Rina and a lack of time for musical interaction between Rina and her parents, as a result of the termination of the mother's one-year maternity leave. The analyses of the mother's perception of Rina's musical development indicated the role of musical memory that enabled Rina to learn the socially-constructed musical responses, singing and sound-making, without momentary musical interaction occurring. Rina's language development and her sociable character were perceived to play a role in stimulating her musical behaviours, which might also contribute to her musical development.

6.6 Analyses of contextual factors of Rina's musical development

This section presents the analyses of Rina's musical environment within the family context that might serve an influential role in shaping her musical development. Examined through the lens of Ecological Systems Theory (Bronfenbrenner, 1979, 2005), Rina's musical environment is conceptualised into Micro-, Meso-, Exo-, Macro- and Chronosystems, representing different aspects from the materials and social interaction within the immediate settings to the remote factors, the cultural impacts, along with the consideration of the passage of time. The following sections present the aspects of each system that might play an influential role in Rina's musical development.

6.6.1 An overview of Rina's socio-cultural musical environment

Figure 6.11 illustrates Rina's musical environment conceptualised into Microsystem, Mesosystem, Exosystem, Macrosystem and Chronosystem, demonstrating the different aspects of her musical environment in the family context that might play an influential role in shaping her musical development. The Microsystem represents her family home in the UK, which constituted the musical materials available at home that facilitated Rina's musical engagement, the nature of musical activities at home, social interaction within the family that stimulated Rina's musical interaction with her parents, general parenting practice and the parental beliefs about Rina's musical learning. The car is regarded as an extension of the home environment, as she experienced music on the car journeys, as reported by the mother. The Mesosystem represents the network or places in which the family took part on a regular basis and Rina had opportunities to gain musical experiences. These included the family's social network, the institutions and facilities in the local community, and the relatives' (Rina's great grandparents') home in China. The Exosystem represents the remote factors such as the musical biographies (including musical preferences) of the parents and the family's connection to their Chinese home country, which was not directly participated in by Rina but played an influential role in shaping her daily musical experiences. The Macrosystem represents various musical genres exposed to Rina, the influence of Western musical culture, and multiple cultural immersion including UK culture, Chinese culture and the family's culture. The Chronosystem recognises the changes of Rina's musical environment over time that might have an impact on Rina's musical development. The following sections will explore the characteristics of each system and how these factors might shape Rina's musical development.

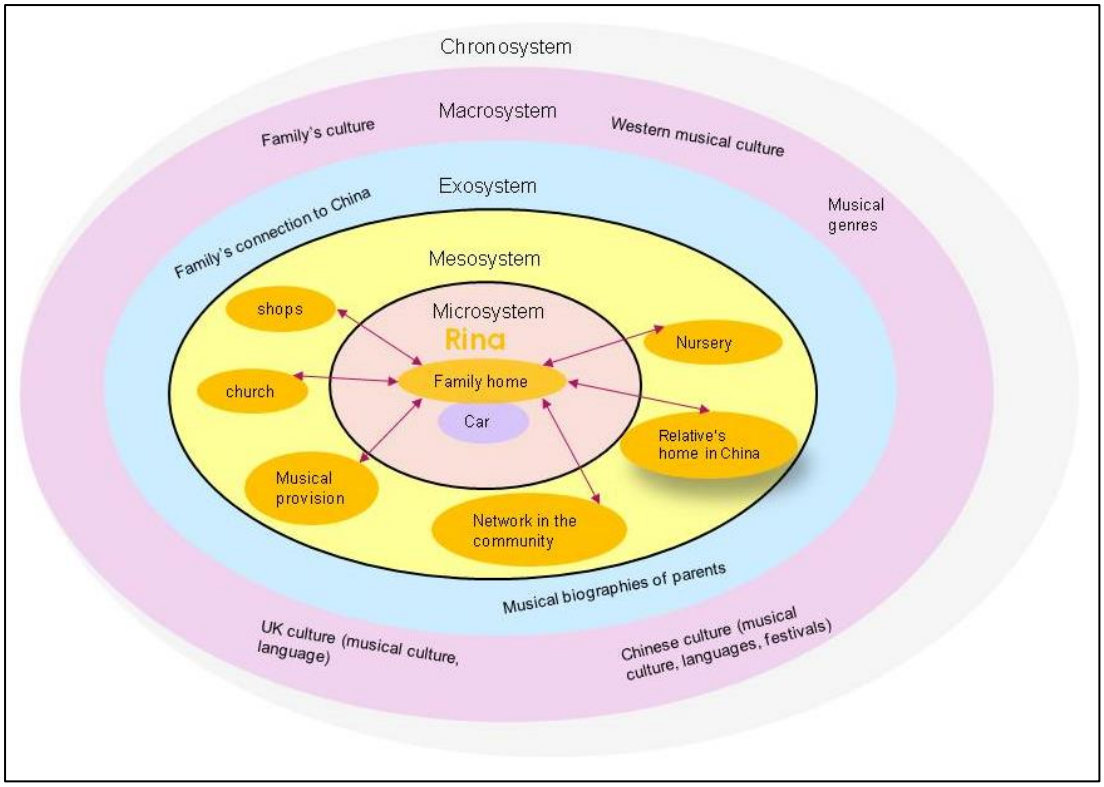

Figure 6.11: Rina's musical environment within the family context through the lens of the Ecological Systems Theory (Bronfenbrenner, 1979; 2005)

6.6.2 Microsystem

Rina's Microsystem represented her family home in the UK, and this was extended to car journeys and other travelling moments. Rina's musical engagement in the family home was analysed taking into consideration the following aspects: the available materials in the home that created a musical environment for Rina, the nature of musical activities taking place in the family, the social interaction within the family home that created opportunities for Rina's musical engagement, musical engagement whilst travelling, general parenting practice and its integration with music, and the parental beliefs regarding Rina's musical learning. These aspects are explored in the following sections.

6.6.2.1 The musical materials in the home environment

Living in a house which was large enough to have a front garden, Rina usually played in the living room where there was always a big towel placed on the floor with baskets of toys put around the play area (Figure 6.12). The materials available at home to facilitate Rina's musical engagement included the traditional (non-electronic) musical toys and the technological products such as musical devices and media. The traditional musical toys available in the living room included a home-made shaker, a Chinese rattle drum, a bell, a

sound ball (Figure 6.13) and a set of wooden toy percussion. Described by the mother Hailey as well as demonstrated in the video recordings, Rina would play with these musical toys for sound exploration, although the sound-making activities also involved the use of other materials, such as kitchen utensils. There were various electronic musical toys available to Rina, such as an audio book and the electronic keyboard toy for Rina to press and listen to music, which potentially created multi-sensory experiences for Rina. Digital technology and electronic media played a major part in Rina's musical experiences in the family home. The family relied heavily on CDs, an mp3 player (Figure 6.14) and a tablet to play music from YouTube throughout the day when Rina was at home. In addition, there was Mandarin children's DVD 'Ciaohu'[22] that Hailey brought from China for Rina to watch at home. In general, there were a range of musical materials available at home for Rina to experience music. The enrichment of Rina's musical experiences also depended on the quality of musical engagement with these musical materials, in which the parents might play an important role in interacting with Rina and facilitating her musical experiences.

Figure 6.12: Rina's playing area in the living room

Figure 6.13: Musical toys available to Rina in the living room

Figure 6.14: A Wireless mp3 player to play music at home

[22] 'Ciaohu' (巧虎，meaning 'clever tiger') is the children's DVD series originating from Japan and becoming popular in China and Taiwan in recent years. The series is designed for different age groups from 1 year old onwards and aims to promote the learning of different skills in life through interesting episodes (http://www.parenting-times.com/about-us.php).

6.6.2.2 Musical activities in the home environment

When staying at home, Rina was engaged in various musical activities throughout the day, such as listening to and dancing to music, exploring the musical toys and/or having musical interaction with her parents by singing or vocalising. Rina's reported musical activities were characterised by social interaction, such as being watched, echoed or joined by her parents, presumably due to the intuitive responses from the parents, as well as the caregiving nature of the parents. For instance, the family would sing, dance and clap to the music together and copy each other's movements. In this type of joint musical activity, Rina played an active role in stimulating the musical responses of her parents, which then generated the mutually-imitating musical responses between both sides. This reciprocity might have had a positive effect in Rina's musical development, as perceived by the mother (also see 6.5.4):

> *I notice that throughout these months, she became good at dancing. I don't know where she learnt it from, but she really likes dancing, wiggling around. Because of her wiggling, we would wiggle with her when listening to music, which forms an interaction. She might also feel that we are encouraging her [to dance], and she would dance [to music] more frequently.* (Rina Interview [3])

Rina's own initiative of dancing to music was not limited to her family home, but it was also reported in other social contexts, such as dancing to recorded music when visiting a friend's place and dancing to Chinese New Year music when watching a TV programme with a group of Chinese relatives (Rina Interview [3]). In both cases, Rina's musical responses were echoed by the adults, which generated the reciprocity of musical responses between Rina and other adults.

A particular feature in Rina's family home was the background music that was constantly played to Rina throughout the day. Rina listened to music when she was playing with toys or having a meal. Hailey explained that it had been her own personal habit to have Western Classical music playing in the background since she was a teenager (see Section 6.6.4). Rina was exposed to a variety of musical genres, with Western Classical music as the family's preferred genre. Hailey listed the Classical music that was frequently played to Rina by the composers, such as Bach, Mozart, Vivaldi and Chopin. The music collections available on YouTube were highlighted by Hailey, as the videos such as 'The best of Bach', 'The Best of Mozart' and 'The Best of Vivaldi' had always been the family's favourites. In addition to Western Classical music, a wide range of music was experienced by Rina, such as Jazz, 'baby music', French and English nursery rhymes, Chinese children's songs, children's hymns, English pop music and Irish music. The variety of musical genres that

comprised the family's listening experiences reflected the backgrounds of the parents and their musical tastes. The constant background music seemed to stimulate Rina's reactive musical behaviours, as Hailey noticed that the constant musical exposure seemed to make Rina more sensitive and responsive to the melodies, such as wiggling or twisting to them.

In general, Rina's musical activities in the family home demonstrated various forms of musical engagement such as dancing to music, vocalisation or sound-exploration, and this was embedded in an interactive context, as the mother Hailey gave immediate responses or stimulated Rina's musical engagement. The music-listening activities also reflected Rina's musical exposure to extensive musical genres.

6.6.2.3 Social interaction within the family home

The interaction with people in the family played an important part in shaping Rina's musical development. There were abundant musical interactions between Rina and Hailey. When alone with Rina, Hailey spoke to and interacted with Rina in Mandarin, which provided her with a sonic environment of additional languages besides English. Hailey was enthusiastically responsive to Rina's vocalising or sound-making behaviours, which she showed by imitating her, which then normally generated a musical interaction. Hailey would also initiate singing or sound-making activities to attract Rina's attention. Hailey's singing repertoire included English nursery rhymes, French nursery rhymes and Chinese children's songs, and the choices of the French nursery rhymes and Chinese children's songs reflected Hailey's family origins of Mainland China and the Republic of Mauritius. In spite of the cultural backgrounds, Hailey admitted that she needed to learn the Chinese children's songs from YouTube before singing to Rina, as she forgot most of the lyrics. In addition to singing, Hailey used the verbal prompts with a rhythmic feature as a cue for certain interactions with Rina. For example, when Hailey counted 'one, two…' rhythmically with her hands clapping, Rina knew and got ready to be held up high when she counted to 'three' (Rina Interview [1], ⑨– R3D). Hailey not only had musical interaction with Rina, she also gave immediate positive feedback to Rina when she attempted to vocalise or make sounds, such as hooraying 'yay~~' after Rina shook the maracas (Rina Video [4]). Moreover, when Hailey was busy with housework, she prepared a welcoming environment for Rina to explore sounds in the kitchen:

> *When I am doing housework in the kitchen, I will put her there [in the kitchen], and open those cupboards, letting her explore those pots and spatulas, and she would make different sounds with them. (Rina Interview [2])*

There were also abundant musical interactions between Rina and David, which often took place on the weekend. He would play and sing to Rina songs by The Beatles that came from his musical preference and other English songs that featured strong tempi. He would also play the traditional Irish dance songs and invited Rina to dance together with him, which reflected his cultural background from the Isle of Man. The interactive engagement started even before Rina's birth, as David used to read stories to Rina every night when she was still in the womb, as reported by Hailey. In addition to Hailey and David, Mary, Hailey's mother who lived in Mainland China, would also come to visit twice a year and would stay at Rina's home for two months or so each visit. When being asked about the musical interaction between Rina and Mary, Hailey explained that she asked Mary to sing to Rina and she sang those 'revolution songs' or songs learnt from the TV (Rina Interview [3]). From one of the interviews at which Mary was also present and expressed her opinion, she would play the children's hymns to Rina when staying at home, and Rina would listen to them. The significance of the grandmother's visit, in musical terms, was to provide Rina with a Mandarin-speaking environment and musical exposure to music from the Chinese culture, and the selection of the children's hymns enhanced the family's religious identity as Christian. Overall, there was abundant social interaction between Rina and other family members that generated musical interaction. In addition, Rina's social interaction was not limited to her parents, but she also had opportunities to have musical interaction with Chinese relatives who came to stay in Rina's family, which characterised the family as part of Chinese diaspora in London.

6.6.2.4 Musical engagement when travelling

Rina regularly experienced music on her car journeys as well as whilst travelling in her pram around the local area. On the car journeys, which took place after Hailey picked her up from the nursery, Rina was exposed to the music from the radio which was constantly in the background. Rina was once reported to respond to Adele's 'Someone Like You' by copying Adele's singing style (Rina Diary [7], ㉞ – R2A&I3B], which Hailey described as 'imitating Adele's intonation of singing' (Rina Interview [2]). Furthermore, Rina developed her vocalisation when travelling in her pram. For instance, a video recording demonstrated that Rina was exploring her vocalisation with a pattern of repeated minor third intervals when she was in the pram (Rina Video [10], ㊶ – P3C) (Section 6.4.2). The travelling journeys, in Rina's case, seemed to provide Rina with time and space to vocalise or respond to music with fewer interventions from adults due to the nature of its social context, as the adult would be busy with driving or walking. The exposure to the radio playing in the car immersed Rina in music from Western cultures and reflected the family culture of listening to popular music during driving.

6.6.2.5 Parenting practice and its integration into music

In Rina's family, sound and music was integrated into Hailey's parenting practice, where it was used to establish a daily routine for Rina and to regulate her emotional states when she was in a grumpy mood. Sounds and music were used to signify Rina's bedtime and meal time. When Rina was about five months old, Hailey started using bell-ringing as a sign for meal times. Rina's understanding of this particular sound was demonstrated when she shook the bell to express her unwillingness to eat more (Rina Interview [1], ⑧ – P3D). Furthermore, when Rina was younger, 'baby Mozart' music was always played at Rina's bedtime, which was to help Rina to establish her sleeping pattern. These uses of sound and music not only set up a routine for Rina, but also established the family identity that was unique to Rina's family. In addition to the establishment of the family routine, music was also used to regulate Rina's emotional state. For instance, it was reported in the diary that when Rina was moody or grumpy, Hailey would sing the song 'When She Comes around the Mountain', which always cheered her up (Rina Diary [6]). Furthermore, during their trip to New York, Hailey continuously sang Rina's familiar French nursery rhymes to make her feel secure in a new environment. Hailey found that the upbeat nature of the song and Rina's familiarity with the music seemed to have a calming effect on Rina. Overall, the use of sound and music was integrated into Hailey's parenting practice by establishing a daily routine and regulating Rina's emotional state, and the upbeat musical nature and Rina's familiarity with the music also contributed to the effectiveness of her emotional regulation.

6.6.2.6 Parental beliefs and expectation for Rina's music learning

The perception and values of the parents played an important role in shaping Rina's musical experiences and development. Hailey's perception of Rina's musical behaviours and development were positive overall:

> *I found that she has more sense of rhythm compared to the children of same age, but I don't know if that is because they said that the biracial children are smarter.* (Rina Interview [1])

> *I know she's a smart girl as she copied [the responses to music] from the adults very quickly.* (Rina Diary [8])

With respect to Rina's musical exposure and the family's habit of playing background music (see Section 6.6.6.2), Hailey believed that playing music in the background for Rina was an exposure to various types of music that would nurture her musical interest and talent. Hailey also noticed the different provision of musical genres from her and David due to their diverse musical preferences. For instance, she preferred listening to easy-listening music, while David preferred rock music or music with strong tempi. Hailey held a positive attitude

towards the diversity of their musical preferences, as it led to a wide range of musical exposure for Rina:

> *'I used to think, how could you teach a child like this? But Rina seemed to be very responsive [to music of strong tempi]. She was wiggling a lot and had interaction with her dad. She was very engaged. Then I feel, to be honest, it is not bad when parents have different backgrounds.' (Rina Interview [1])*

However, Hailey preferred the music with melodies and prohibited David from playing 'heavy metal' to Rina, as she felt that it implied a hot-tempered character (Rina Interview [1]). Therefore, whilst Hailey embraced a variety of musical genres to be exposed to Rina, she discouraged certain genres that she regarded as 'inappropriate' for Rina to listen to.

When it came to the values and practices of Rina's music learning, Hailey had taken Rina to a range of music groups in the local area, in order to promote Rina's social skills through group activities, along with her belief in the benefit of music on children's brain development (see Section 6.6.3). As to Rina's musical learning in the future, both Hailey and David were keen on providing a nurturing and inspiring environment for Rina in preparation for her to learn a musical instrument when she becomes older. For the time being, they wanted to pick up playing the piano again, hoping that this would have a positive effect on Rina becoming more interested in learning the piano. Hailey further explained the significance for Rina of learning musical instruments. Besides the continuity of David's family's tradition of music learning, learning a musical instrument, in Hailey's view, was linked to establishing a good character as a person and also an emotional support in life:

> *[To learn an instrument] is a hobby. I think to learn an instrument is good for her to establish her resilience and patience. She can sit still from a young age, based on her interest, to pursue something. That is a good formation of her character. This is the main reason, all the others are secondary. And if she feels…music sometimes can accompany a person's soul and have a healing function. At least, it would be good to have music when she feels lonely. She can also express her happiness through music. I think music has a strong connection with emotion.* (Rina Interview [1])

In general, Hailey and David held a positive view of in providing Rina with extensive musical exposure and experiences. They also had expectations of nurturing Rina's interest in music, which would lead her to learn a musical instrument in the future. Hailey linked music learning with the continuity of the family's musical background and associated learning a musical instrument with establishing a good character, as well as its emotional benefits to lives. These beliefs and expectations might shape the nature of musical activities

in Rina's family, with positive and intensive musical interaction provided to Rina, and this might expand Rina's musical experiences and enhance her musical development.

6.6.3 Mesosystem

The Mesosystem of Rina's musical environment represented the social network and the places in which she gained musical experiences on a regular basis external to her family home. The family's social network in the local area enabled Rina to gain musical experiences when they socialised with their friends in different places. The settings that offered Rina opportunities for musical engagement included the nursery, local music groups, local community, friends' places and the relative's home in China. The characteristics of these settings and their interrelationship with Rina's family home were regarded to be influential in Rina's musical development.

The social network of the family, which featured regular playdates[23]and gatherings at the relatives' or friends' place, extended Rina's experiences of musical materials and instruments, as well as musical interaction with different people. For instance, Rina's family had regular playdates with a group of Chinese families that they knew from the Chinese music group. The playdates, usually attended by mothers and children during the daytime but sometimes also by fathers on the weekend, were mainly for providing children with a Mandarin-speaking environment and for the mothers to socialise and establish a Chinese network in the area[24]. Hailey described a playdate attended by the group of Chinese mothers and children '*involved some story-telling, music, and food most importantly*' (Rina Diary [9]). A video recording demonstrated that, during a playdate, Rina was playing on the piano after seeing a child playing earlier (Rina Video [9], 60 – P3A). In another instance showed in the video, Rina was dancing to music while being surrounded by a group of adults who watched her dancing with a lot of praising as well as laughter (Rina Video [11], 53 – R2B). The social network of the family enabled Rina to experience diverse musical materials and instruments and have musical interaction with people within the family's network. Musical engagement in the context of a positive and joyful atmosphere with familiar people was likely to promote Rina's musical development. Furthermore, participation in the Chinese network seemed to enhance the family's connection with Chinese culture and identity, which characterised Rina's family as part of Chinese diaspora in London.

Rina gained musical experiences in the nursery where she went regularly during the week. The nursery had regular contact with Rina's family by keeping a daily written diary,

[23] The playdates were joined by the mothers and children from the Chinese music group, usually involving story-telling, music and food, as reported by Hailey.

[24] The families in the network usually had a Chinese mother and a British or European father.

informal chatting with Rina's parents, and arranging parental evenings. It was through these conversations that Hailey was informed of Rina's musical behaviours in the nursery, such as imitating actions and trying to join in singing during circle time (Rina Diary [5], ㉖ – I2A). Although there was circle time for music play, music was not emphasised in their activities but a part of their all-rounded curriculum, which was appreciated by Hailey. Daily activities also included daily outdoor walks, seeing animals and story-telling, to list a few. Therefore, Rina's musical experiences were integrated into the daily activities in the nursery. The family's frequent contact with the nursery, through which the parents were informed of Rina's musical behaviours in the nursery, might support the parents' understanding of Rina's current musical ability and interest and also provide further musical stimulation in the home. The regular exposure to English nursery rhymes in the nursery also introduced her to music of traditional English culture.

In addition to the nursery, Hailey had taken Rina to various music groups and baby concerts in the local area. Before her participation in this study, Rina had joined a baby sign language group, an English music group[25], and a Chinese music group. In a music group session, which normally lasted for 45 minutes or so, children and their mothers were engaged in musical activities such as singing and music-making which were organised and led by a teacher. They also made simple percussion instruments, such as a hand shaker by using a milk bottle and beans, which was still part of Rina's musical toys in the home. In the Chinese music group, which was joined by a group of East Asian mothers [26]and their children, the musical activities such as singing, music-making and imaginative games were conducted in a Mandarin-speaking environment. Rina was reported to be '*observing everyone at the beginning and gradually got familiar with the musical instrument and singing.'* (Rina Diary [8], ㊺ – R2A). Besides the music sessions, Hailey also took Rina to the baby concerts 'Bach for Baby' that were held monthly in their local area. In the 30-minute concert, Rina and other toddlers listened to live Classical music played by violin and accordion. Rina was observed to stay quiet and attentive when attending the concert (Rina Diary [6], ㉜ – R5A). Hailey articulated her values towards these music groups as being beneficial to Rina's social skills and brain development, in addition to the enrichment of her life of being a mother:

> *<u>One of the reasons is that I pay much attention to her social skills, that is, for her to get along with children of the same age, so that she will not be shy and be more</u>*

[25] During the period of research participation, Rina had stopped attending the baby sign language group and the English music group due to the summer holiday. She did not return to either of the music groups after summer holiday due to the end of Hailey's maternity leave.

[26] The majority of the mothers were from Taiwan, but there were also mothers from Mainland China, Malaysia and South Korea.

independent. The second reason is that music is good for her brain development. The third reason is more related to myself, I can meet other mothers of similar backgrounds, and we can be together…it is boring when staying at home by myself, so I make a busy schedule [for Rina], which also enriches my life. (Rina Interview [1])

In general, there were a range of music groups targeted for babies and toddlers in the local area where Rina lived, which provided Rina with musical experiences in a structured and adult-led context. However, the intention of joining in these groups, in Rina's case, was not necessarily focused on music, but the social nature of these music groups that was thought to be beneficial to the child, as well as the parents. However, the attendance at the local music groups depended on the availability of the parents' work schedule. For example, there seemed to be fewer opportunities to attend these music groups after Hailey returned to work from her maternity leave (See 6.6.6).

Rina gained musical experiences when participating in the local community, such as going to church or visiting local shops. For instance, during the church service which Rina's family attended every weekend, David and Hailey would hold Rina when they were singing and dancing to the hymns, which was reported to make Rina happy and vocalise 'yah yah yah' to their singing (Rina Interview [1], ⑩ – I2A). Hailey also mentioned the visit to a second-hand piano shop as a result of the family's interest in picking up learning the piano (see Section 6.6.2.5). In the shop, Rina copied Hailey's earlier action of hitting on the piano keys 'with a big smile on her face' (Rina Diary [7], ㊲ – R2A&I2A). In general, Rina's musical engagement in the local community lay in the family's participation in local facilities, such as church and shops, which also depended on the family's culture (religion) and interest.

Rina and Hailey had annual visits to Hailey's relatives in Mainland China, in order to stay connected with the family and to celebrate the Chinese New Year. During her visit to China, Rina was immersed in a Mandarin-speaking environment, which Hailey found had an impact on her vocalisation after coming back to the UK:

There was a big difference in her speaking. During those two weeks, her Chinese suddenly…she spoke many new Chinese words. I also noticed that she would speak long sentences, but I don't understand what she is talking. She would say 'ah ya ah ya ya', making different sounds and make it a sentence. She has an intention but I don't understand it. (Rina Interview [3])

Furthermore, the musical exposure took place when Rina was interacting with the electronic musical toy available at the relatives' place and also when the families were watching TV together. Rina was reported to play in a toy car with sound effect buttons and

recorded music. When sitting in the car, she not only 'remembered to fasten her seat belt' but also pressed the buttons to explore different sound effects and music as well as moving to the music. As demonstrated in the video recordings, the music playing from the toy car was a mixture of English popular songs ('Take Me to Your Heart' and 'This is How We Do It') and Chinese festive music. While Rina was moving to music in the toy car, she was surrounded by a group of adults who praised her rhythmic movement and some of them clapped hands to the beat. In addition, Rina was reported to dance to music from the TV when the families were watching the Chinese New Year celebration programme (Rina Interview [3], ㊶ – R3B). Her wiggling dancing was echoed by the other adults, which initiated the reciprocity of dancing between Rina and other adults. Overall, the visit to China provided Rina with a sonic environment of Mandarin, in addition to her daily sonic environment of English language. Rina was found to imitate the intonation of Mandarin after the visit to China. Rina's musical exposure in China was mainly from the available media, such as the electronic musical toy and TV, which provided her with musical genres from Chinese culture as well as from Western popular culture.

Overall, The Mesosystem of Rina's musical environment demonstrated a variety of the settings in which Rina gained extensive musical experiences by listening to music of different genres, interacting with different people and musical materials. During this process, she was also immersed in the musical culture of the settings that she participated in, such as the nursery, local music groups, church and the relatives' home in China. The connections between individual settings and the family home, such as the mutual trust between the family and the educational provisions of the nursery and musical groups, the family's participation in the local community, the family's network both in the UK and in China, seemed to have a positive effect on Rina's musical development. The Mesosystem also reflected the mobile nature in Rina's case, as her musical experiences were not fixed in local settings, but her regular visits to Hailey's home country also seemed to be influential in shaping Rina's musical development.

6.6.4 Exosystem

The Exosystem of Rina's musical environment represented the remote factors that were not directly participated in by Rina but played an influential role in shaping Rina's daily musical experiences. These factors included the musical biographies of the parents and the family's connection to Hailey's home country China. These factors were regarded as having an impact on Rina's daily musical and language exposure and parental expectation for her music learning in the future.

The musical biographies of the parents comprised the music-listening and music-learning experiences of the parents in their childhood as well as later lives. As to Hailey, she remembered listening to the Chinese children's songs in her childhood, such as 'e, e, e' (goose, goose, goose), which she would also sing to Rina. However, this was supported by the music videos on YouTube, as she had forgotten most of the lyrics. Hailey learnt the keyboard when she was a child, but she was not persistent enough to continue to an advanced level. She particularly mentioned her habit of listening to Western Classical music when studying since her teenage years. Hailey continued this habit by playing Classical music in the background when staying at home with Rina (also see 6.6.2.2), which was likely to shape Rina's daily musical exposure and her enculturation into Western musical culture. As for David's musical background, he had learnt piano from his grandfather since childhood and played the Bassoon in an orchestra in his school years. When it came to musical preferences, Hailey and David both had an interest in Western Classical music, and they used to go to concerts at The Royal Festival Hall or the BBC Proms. In addition, they also had different musical tastes. For instance, Hailey enjoyed easy-listening music, R&B and Indie music, and David favoured The Beatles songs, strong-tempi rock music, English pop songs and Irish songs. David's musical preferences also reflected his cultural backgrounds that were influenced by British and Irish cultures. Hailey regarded the diversity of their musical preferences as being a facilitator for Rina's musical exposure to extensive genres (Section 6.6.2.5). The parents' backgrounds of instrumental learning seemed to have an impact on their expectation for Rina's music learning in the future and the provision of a nurturing musical environment for Rina. The impact of parental musical biographies was also facilitated by technology and media, as Hailey and David would play the music of their preferences from CDs or YouTube that were available at home.

The family's connection to Mainland China was demonstrated in the mobility of family members between the UK and China. When Rina's grandmother Mary came to visit, Rina had more opportunities to be immersed in a Mandarin-speaking environment and be exposed to the song repertoire that Mary brought to Rina, which featured music from the Chinese context of her generation, such as the revolution songs. She also played children's hymns to Rina as the family was a faithful Christian family. When Rina and Hailey visited their relatives in China, she not only had opportunities for Mandarin exposure, but she was also immersed in Chinese music through a range of media, such as the electronic toy car and Chinese TV programmes. The family visit trip during Chinese New Year also enabled Rina to experience Chinese festive songs, which are normally composed of the Pentatonic

Scale[27]. The family's contact with Hailey's home country through in-person interaction and a visit to China provided Rina with musical and language exposure in the Chinese context.

6.6.5 Macrosystem

The Macrosystem represented the cultural impacts that were embedded in the mechanism of Rina's Micro-, Meso-, and Exosystems. These included diverse musical genres exposed to Rina which implied multiple musical cultures, the influences from the UK culture and Chinese culture, and the family's culture that represented the uniqueness of Rina's family in musical aspects. Western musical culture was recognised to overlap many musical genres experienced by Rina.

Across Rina's musical instances reported by the mother as well as demonstrated in the video recordings, Rina was exposed to extensive musical genres. These musical genres included:

- English nursery rhymes
- Chinese children's songs
- French nursery rhymes
- Jazz music
- The Beatles songs
- English rock music
- English pop music
- Irish music
- Western Classical music
- Chinese festive songs
- Children's hymns

The diversity of musical genres experienced by Rina reflected the complexity of the social and cultural influences within Rina's family. Settled in London, the family was immersed in music of English culture, such as English nursery rhymes and English popular music, through the participation in the local community, as well as the consumption of UK radio broadcasts. The mother's cultural background and identity being Chinese further exposed

[27] The Pentatonic Scale is used in traditional Chinese music, comprising five tones of gong, shang, jie, zhi, yu, which correspond to 'C, D, E, F, G' in Western Scale.

Rina to music in a Chinese context, such as Chinese children's songs and Chinese festive music through maternal singing and the listening experiences through media in Mainland China. The participation in English and Chinese culture also implied the immersion in a bilingual language environment for Rina, which might shape her sonic environment and vocalisation in musical aspects.

The variety of musical genres exposed to Rina also reflected the impact from Rina's family culture. The family culture represented the cultural backgrounds of the parents, musical biographies and preferences of the parents and the family's religion. With respect to the cultural backgrounds of the parents, musical influences from David included the provision of Irish music and dancing with Rina and English rock music and pop music. In addition, Rina's exposure to French nursery rhymes came from Hailey's family background in the Republic of Mauritius. The selections of music to play from the family's cultural origins not only reflected the cultural identities of the parents, it might also demonstrate their intention to retain the cultural heritages for the next generation through music. In addition, the musical preferences of the parents, which might also be associated with their cultural backgrounds, contributed to Rina's extensive musical exposure. The family's religion, being Christianity, further provided Rina with the musical genre of children's hymns. In many aspects, Rina's musical exposure was influenced by Western musical culture, which was embedded in the music of UK culture, Chinese culture and the family's culture. For instance, listening to Western Classical music, which was Hailey's habit since her teenage years, might be part of Chinese culture.

Overall, Rina's musical enculturation reflected the complexity of cultural influences and her immersion in multiple cultures, coming from the host society (London), home country (China), and the musical biographies of the parents. Through these cultural influences, Rina developed her abilities of singing, music-making and musical appreciation and preferences that are socially and culturally constructed.

6.6.6 Chronosystem

The Chronosystem represented the changes in the environment over time that was regarded to be influential in her musical development. There were several events in the period of the family's research participation that might play a role in shaping her musical development. For instance, the building-up of the days that Rina attended the nursery from one day to four days a week seemed to provide Rina with an increasing musical exposure to music from the English culture, such as English nursery rhymes, which seemed to familiarise Rina with musical features of Western music, as well as a repertoire of English nursery rhymes. This influence could be seen in the musical instances in which Rina was reported to hum

recognisable tunes (Rina Diary [8], ㊼ – P4A). Furthermore, as the songs were sung during circle time, Rina was likely to be encultured in the form of adult-led musical activity as a part of the daily schedule in the nursery. Rina's musical development was shaped by how she responded to music and was engaged in group singing.

Important life events of the main caregivers might also play an influential role. For instance, it was reported by Hailey that Rina had to withdraw from the local music groups that she used to attend due to her returning to work from a one-year maternity leave. Furthermore, Hailey admitted that after returning to work, her musical interaction with Rina was not as much as the time during the maternity leave, in which they stayed together for 24 hours and she could 'systematically' sing to Rina (Rina Interview [2]). The reduced opportunities for musical interaction between Rina and Hailey might have an impact on her musical development, particular in the Interactive domain.

6.6.7 Summary

Through the lens of the Ecological Systems Theory, the contextual factors that might play an influential role in shaping Rina's musical development were conceptualised into Micro-, Meso-, Exo- , Macro- and Chronosystems. The potential influences on Rina's musical development within the family context was presented, ranging from the daily participation and social interaction within the family, as well as local communities to the impacts of multiple cultures that represented the influences from UK and Chinese contexts, along with the unique musical culture within Rina's family. The temporal events that occurred during the family's research participation period, such as the increasing days of nursery attendance and the termination of the maternity leave, was also regarded to play an influential role in Rina's musical development.

6.7 Summary of the Chapter

This chapter presented the second case study analyses of Rina's musical development and how the family context might shape this musical development. Examined through the SoI-EY framework, Rina's musical behaviours were understood in various patterns defined by domain (Reactive, Proactive, and Interactive), level (Levels 2, 3, 4 and 5), and four elements (A, B, C, and D) within each matrix of domain and level. Within individual musical instances, there were various patterns featuring single as well as multiple SoI-EY levels and/or domains. In general, Rina's musical behaviours concentrated on lower levels, although there were occasional musical instances demonstrating her advanced musical abilities, particularly in the Reactive and Proactive domains. The analyses of Rina's musical development

demonstrated no statistical significance between SoI-EY levels in all of the three domains and the passage of time, reflecting the variance of levels that Rina exhibited throughout the reported period. The decreases in trendlines in the Reactive and Interactive domains might be associated with less musical exposure and fewer opportunities in musical interaction in the later stage of the reported period. Rina's musical development perceived by the mother revealed the significance of musical memory that played a supportive role in Rina's dancing, singing and sound-making development, in addition to learning from momentary imitation. The contextual factors of Rina's musical development, which were conceptualised into Micro-, Meso-, Exo-, Macro- and Chrosystems, revealed that Rina's musical development was supported through the complex interrelationships of various factors ranging from the daily participation in the family and the local community to the impacts from English culture, Chinese culture and the family culture, and a prevalence of Western musical culture was revealed in Rina's daily musical exposure. These contextual factors, which characterised Rina's family as part of Chinese diaspora in London, were regarded to play an influential role in shaping Rina's musical development.

Chapter 7: Case study analyses: Ellen and Betty

7.1 Introduction

This chapter presents the third and fourth case study analyses that demonstrate the musical development of two children (sisters) at 4Y3M and 10M respectively and how the family context as being part of Chinese diaspora in London might play a role in shaping their musical development. Data collection was undertaken between July 2014 and February 2015. The data sources under analysis included 9 diary entries written and sent via email by the mother, three interviews with the mother, and 5 video recordings provided by the mother as supplementary documents to the diary account and interviews. The diary entries were all typed in English and the interviews were conducted in Mandarin, although the mother used a mixture of Chinese and English during all of the interviews. The interview transcription and video transcription that were translated into English by the researcher were underlined. In order to maintain the confidentiality of the participants, the children's names 'Ellen' and 'Betty' are used as pseudonyms for each case study in this chapter.

This chapter is organised into the following sections: Section 7.2 provides the background demographic information on the family and Ellen's and Betty's musical experiences prior to the family's participation in this study. Section 7.3 presents the analyses of Ellen's and Betty's musical pathway profiles, which are illustrated with two separate concentric circles of the SoI-EY framework. Section 7.4 provides the examples of Ellen's and Betty's musical behaviours conceptualised as SoI-EY domains of Reactive, Proactive and Interactive. Section 7.5 presents the longitudinal data of Ellen's musical development, in which Ellen's SoI-EY ratings in individual domains over a total of 29 weeks was analysed with different perspectives. Section 7.6 presents the longitudinal data of Betty's musical development, in which Betty's SoI-EY ratings in individual domains over a total of 29 weeks were analysed with different perspectives. In Section 7.7, how Ellen's and Betty's musical development might be shaped by their family context was examined through the lens of the Ecological Systems framework, in which the potential socio-cultural factors were conceptualised in Micro-, Meso-, Exo-, Macro-, and Chronosystems. The chapter is summarised in Section 7.8.

7.2 Background information for Ellen, Betty and their family

The family started their research participation in July 2014 when Ellen was 4 years 3 months old and Betty was 10 months old. The mother, Vicky, called herself 'overseas Chinese in Malaysia'. She first came to the UK in 1997 for university studies and stayed for work ever

since. Table 7.1 demonstrates the demographic information of the family. English was the language that the family spoke at home. However, when Alex the father was absent, Vicky would speak some Mandarin to Ellen and 'exclusively' spoke Mandarin to Betty. The family was settled in Greater London when they participated in the present study.

Table 7.1 The demographic information and Ellen and Betty's family (gathered on 25th July 2014)

		Father	**Mother**
Name (pseudonym)		Alex	Vicky
Origin	Region	British	Kuching, Malaysia
	Language(s)	English	English, Mandarin, Malaysian dialect
Age group		30-39	30-39
Highest degree		Bachelor	Bachelor
Current occupation		Software developer	Tax manager
		Children	
Name (pseudonym)		Ellen	Betty
Age		4.5	10 months
Gender		Girl	Girl
Schooling		Preschool (Reception from September 2014)	Day care from September 2014

Prior to the participation in this study, Ellen and Betty had extensive musical experiences. When Ellen was younger, Vicky used to take her to 'rhyme time in the library', in which they learnt to sing different English nursery rhymes with hand gestures. Vicky regarded this musical exposure by Ellen as beneficial for her language development and to build up her confidence at school, as she could sing many nursery rhymes independently. Furthermore, Ellen had started private cello lessons two months prior to the family starting the research participation, and she was learning to pluck. Vicky explained that they were following the Suzuki method, in which '*you have to know how to listen to the music first before you know how to read the note*' (Ellen&Betty Interview [1]). To enhance music learning through listening, she played the Suzuki CD in the car for Ellen to listen to the musical pieces that she was going to learn. In addition to cello, Ellen had also learnt to play the flute for one term. However, they decided to drop out of the flute lessons due to a lack of time. Furthermore, Ellen attended a Ballet class, which Vicky emphasised was following Ellen's request.

Described by Vicky, there were two teachers in a session, one focusing on teaching Ballet and one playing the piano to accompany the Ballet dancing. In the home environment, Ellen would listen to phonics CDs from which she learnt English phonics through songs. As for Betty, Vicky and Ellen would sing Chinese children's songs to her. Vicky described how she usually sang to Betty during a meal, as '*she is strapped in the chair and would listen to my singing*' (Ellen&Betty Interview [1]). In order to introduce Chinese language to Ellen and Betty, Vicky had taken them to a Chinese music group[28], in which a Chinese teacher led a group of children and their mothers, mainly from Chinese origin, to sing Chinese children's songs and engage in a range of musical activities. In general, Ellen and Betty were immersed in a nurturing musical environment prior to their participation in the present study. They had a variety of musical exposures at home, as well as attending a range of musical provision in the local community.

On a typical day, Ellen went to school from 8.40am to 3.10pm. She attended an after-school club two days a week, where a group of children undertook activities such as playing, drawing or writing together, all supervised by an adult. After getting home, Ellen had cello practice with Vicky for 10 to 15 minutes before she was allowed to have free time. Her younger baby sister, Betty, stayed at home with Vicky, but started attending a daycare centre after Vicky's return to work from her one-year maternity leave. Ellen and Betty would go for playdates during the week and the family also had gathering-type events at the weekend. Vicky took the children back to Asia once a year to meet her family. Rather than visiting Vicky's hometown in Malaysia, they would arrange a family trip to other Asian countries, such as Mainland China, Hong Kong, or the Philippines, as Vicky explained, '*I don't think it's important to go to the place I grew up, but it is important to know my family. So regardless of where we are.*' (Ellen&Betty Interview [3]).

With respect to the cultural values and practices in the family, Vicky was keen on providing a Mandarin environment for Ellen and Betty as a way to retain their ethnic Chinese roots. When asked about what thoughts or behaviours characterised her family as a Chinese family in the UK, Vicky emphasised that she demanded more discipline of her two daughters, compared with her perception of English mothers. Moreover, she also hoped to install the concept of filial piety in them. Nevertheless, as Ellen and Betty were Western-born, Vicky was aware of the contradiction in Eastern and Western values, which were conveyed, for example, through the children's stories. Thus, she preferred introducing the Chinese cultural heritage through Chinese children's songs, as '*they are, more or less, quite similar [to*

[28] This Chinese music group was the same as the one that Rina (the second case study) and Hailey attended.

Western culture]' (Ellen&Betty Interview [1]). The family celebrated both Western and Chinese festive events, such as Christmas and the Chinese New Year.

7.3 Analyses of Ellen's and Betty's music-developmental pathways

This section presents Ellen's and Betty's music-developmental pathways individually in two separate subsections. The musical instances and the corresponding SoI-EY ratings over 29 weeks were generated from 9 diary entries and 5 video recordings that were supplementary to the diary account provided by the mother, and three interviews with the mother. In each subsection, the characteristics and complex patterns of Ellen's and Betty's SoI-EY ratings are explored.

7.3.1 Analyses of Ellen's music-developmental pathway

Figure 7.1 demonstrates Ellen's music-developmental pathway at her age between 4Y3M and 4Y9M. There are a total of 51 musical instances identified across all data sources, in which 62 SoI-EY ratings were generated (see Appendix 8 for the list of SoI-EY ratings). The individual musical instances were symbolised as ①, ②, … to ㊶ and mapped onto the concentric circle that represented the SoI-EY framework, according to their SoI-EY ratings. Figure 7.1 illustrates the distribution and complexity of Ellen's musical behaviours in terms of SoI-EY levels and domains over 29 weeks. The individual musical instances rated with multiple SoI-EY domains are linked with green lines. Grey dashed curves represent the musical instances rated with multiple elements within the same domain and level.

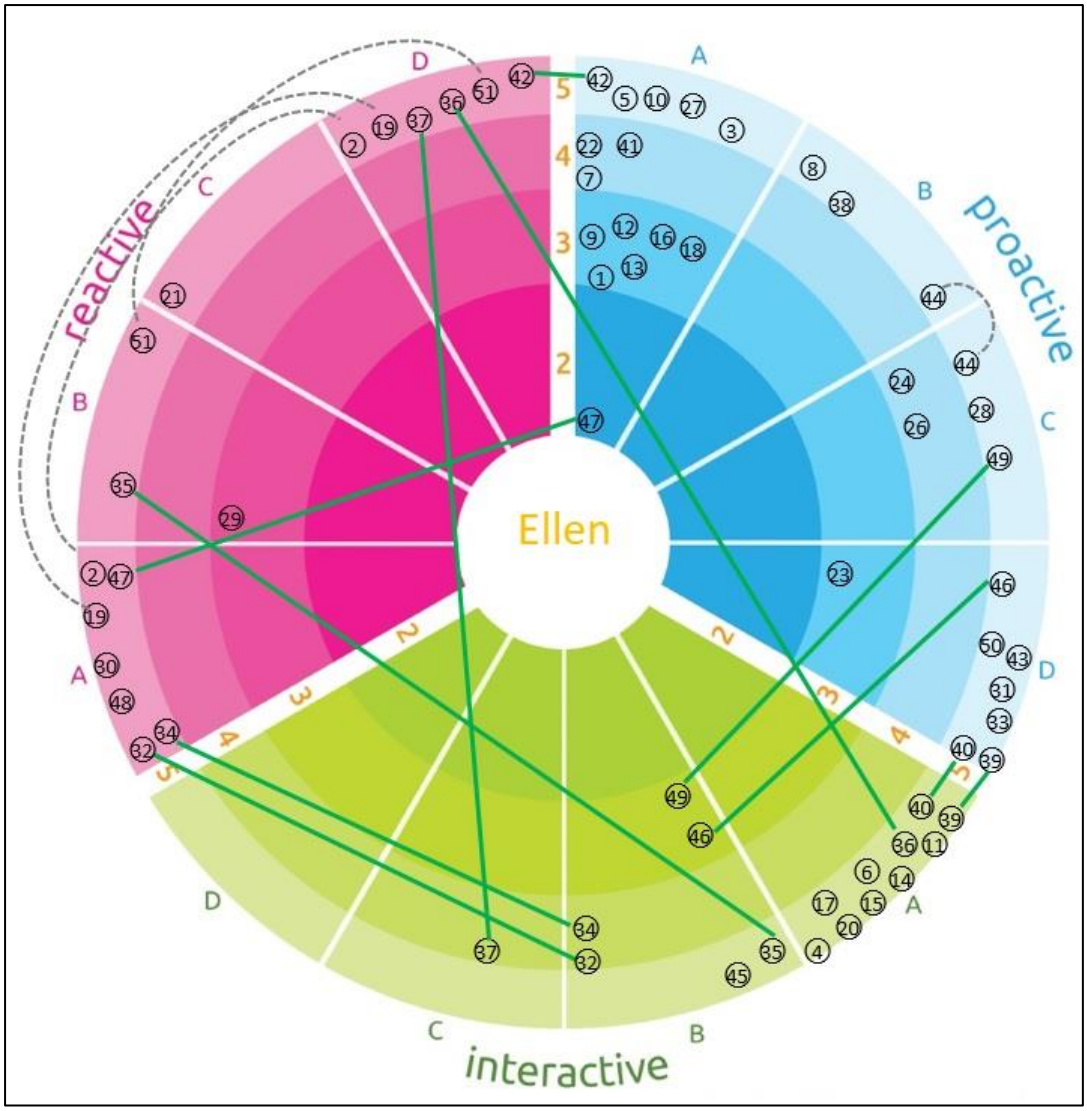

Figure 7.1: Ellen's music-developmental pathway profile (Aged 4Y3M - 4Y9M)

According to the data represented in Figure 7.1, the most frequent SoI-EY rating determined by Domain-Level-Element is 'I5A' – *sing or play pieces with others, sharing a part*, which accounts for 10 instances. The other frequent SoI-EY ratings included 'R5A' – *attend to pieces all the way through* (7 times), 'P5A' – *sing whole songs, increasingly in time and in tune*' (7 times) and 'P5D' – *learn to play simple pieces on a pitched instrument* (7 times). There were musical instances that were rated with multiple elements within the same matrix of domain and level. For example, in the matrix of Reactive Level 5, there were Elements A and D (2 times) and Elements B and D (2 times) being rated simultaneously. This showed that, in these musical instances, Ellen associated music with particular meanings while attending to the whole pieces or responding to simple musical structures. Moreover, in the matrix of Proactive Level 5, there were Elements B and C being rated within

the same musical instance, demonstrating that Ellen altered the melodies and/or rhythm of familiar songs while improvising music at the same time.

When examining the distribution of various Domain-Level matrixes without taking Elements into account, Table 7.2 further displays the frequency of different combinations of domain and level. Table 7.2 demonstrates that the majority of Ellen's musical behaviours were rated at Level 5, which was especially evident in the Reactive and Interactive domains. Furthermore, there was no musical behaviour rated at Level 2 in these two domains. However, in the Proactive domain, the SoI-EY levels of musical behaviours spanned from 2 to 5, with Level 5 being the most frequent level, followed by Level 3. The majority of Level 3 Proactive musical behaviours reflected Ellen's cello technique practice, such as finger jumping and plucking, which required producing patterned sounds. The only one Level 2 musical behaviour rated was in the Proactive domain, which represented the musical instance in which Ellen was operating an electronic keyboard toy. The distribution and proportion of 62 SoI-EY ratings by level and domain are further illustrated in Figures 7.2a and 7.2b respectively. Figure 7.2a shows that nearly 7 out of 10 musical behaviours were rated at Level 5 (69%), with the proportion of Level 3 musical behaviours (16%) slightly over Level 4 (13%) and Level 2 the least (2%). Figure 7.2b suggests that the Proactive musical behaviours took up nearly half of the SoI-EY ratings, with the Interactive domain (28%) slightly more than the Reactive domain (24%). As these SoI-EY ratings were largely based on the musical instances reported by the mother, the distribution of the SoI-EY ratings, to some extent, reflected the musical behaviours from the mother's point of view.

Table 7.2: The frequency of different matrices of domain and level across Ellen's 51 musical instances

	Reactive	Proactive	Interactive	Total
Level 2	0	1	0	1
Level 3	1	7	2	10
Level 4	0	5	3	8
Level 5	14	17	12	43
Total	15	30	17	62

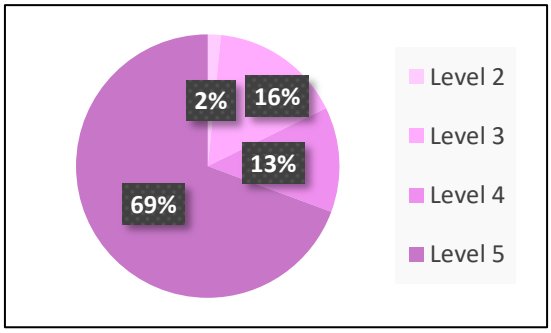

Figure 7.2a: Percentages of Ellen's musical behaviours by level

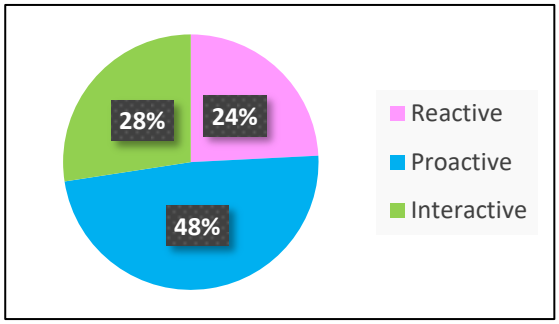

Figure 7.2b: Percentages of Ellen's musical behaviours by domain

Figure 7.1 also illustrates the complex combination of the SoI-EY domains and levels within individual musical instances. For example, there were musical instances rated with multiple domains of Reactive + Interactive (5 times), Proactive + Interactive (4 times) and Reactive + Proactive (2 time), many of which also have cross-level features. The combination of Reactive and Interactive domains implies that Ellen had musical interactions with others, or was engaged in group music-making while showing concentration and understanding of musical pieces. The musical instances with Proactive and Interactive domains demonstrated that she copied from or interacted musically with others while singing or making music independently. In two musical instances, it also demonstrated her singing along with her own playing on the cello.

7.3.2 Analyses of Betty's music-developmental pathway

Figure 7.3 demonstrates Betty's music-developmental pathway aged between 10M and 1Y5M. There are a total of 40 musical instances identified across all data sources, in which 48 SoI-EY ratings were generated (see Appendix 9 for the list of SoI-EY ratings). The individual musical instances across 29 weeks were symbolised as circled numbers from 1 to 40 and mapped onto the concentric circles that represented the SoI-EY framework, according to their perceived SoI-EY ratings. Figure 7.3 illustrates the distribution and complexity of Betty's musical behaviours in terms of SoI-EY levels and domains over 29 weeks. The individual musical instances rated with multiple SoI-EY domains are linked with straight green lines. Grey curved dashed lines represent the musical instances rated with multiple elements within the same domain and level.

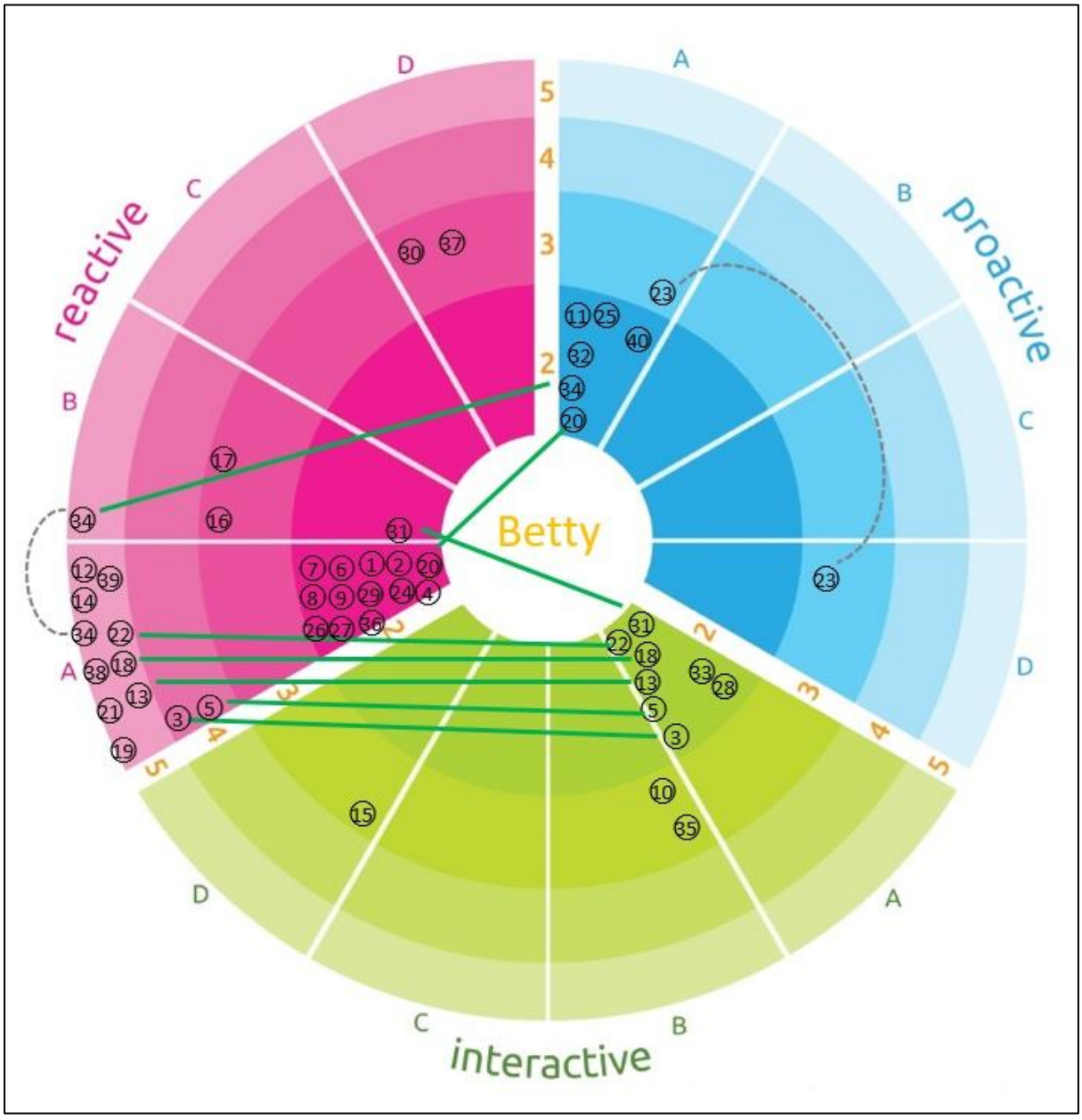

Figure 7.3: Betty's music-developmental pathway profile (Aged 10M - 1Y5M)

According to Figure 7.3, the most frequent SoI-EY rating determined by Domain-Level-Element is 'R2A' – *responds to an increasing variety of sounds*, which accounts for 13 times. The other frequent SoI-EY ratings included 'R5A' – *attends to pieces all the way through* (10 times) and 'I2A' – *responds to others' sounds by making their own* (8 times). There were musical instances that were rated with multiple elements within the same matrix of domain and level. For example, there was a musical instance in which Elements A and B were rated simultaneously within the matrix of Reactive Level 5, which represented Betty's ability to be attentive to musical pieces while showing her recognition to its simple musical structure. In the Proactive domain, there was a musical instance in which Elements A and D were rated within the same matrix of Proactive Level 3, which represented Betty's musical behaviour of making patterned sounds in order to convey particular meanings.

When examining the distribution of various Domain-Level matrixes without taking Elements into account, Table 7.3 further displays the frequency of different combinations of domain and level. Table 7.3 demonstrates that Betty's musical behaviours were mainly rated at Level 2, which was especially evident in the Proactive and Interactive domains. However, in the Reactive domain, the SoI-EY levels of musical behaviours span from 2 to 5, with Level 5 being the second most frequent Level, followed by Level 3 and Level 4. Betty's Levels 4 and 5 musical behaviours were rated only in the Reactive domain but not in the other two domains, demonstrating that she exhibited her recognition and responses to fragments of music or musical pieces before being able to perform them independently or with others. The distribution and proportion of 48 SoI-EY ratings by Level and Domain are further illustrated in Figures 7.4a and 7.4b respectively. Figure 7.4a shows that nearly 6 out of 10 musical behaviours were rated at Level 2, and this is followed by Level 5 (21%), Level 3 (17%) and Level 4 (4%). Figure 7.4b suggests that, compared with the other two domains of Interactive and Reactive, which accounted for 23% and 15% respectively, the Reactive domain was the most frequent domain among all the SoI-EY ratings, taking up 62%. As the musical instances under analyses were largely reported by the mother, the distribution of the SoI-EY ratings, to some extent, is shaped by the mother's perspective on Betty's musical behaviours.

Table 7.3: The frequency of different matrices of domain and level across Betty's 51 musical instances

	Reactive	Proactive	Interactive	Total
Level 2	14	6	8	28
Level 3	4	1	3	8
Level 4	2	0	0	2
Level 5	10	0	0	10
Total	30	7	11	48

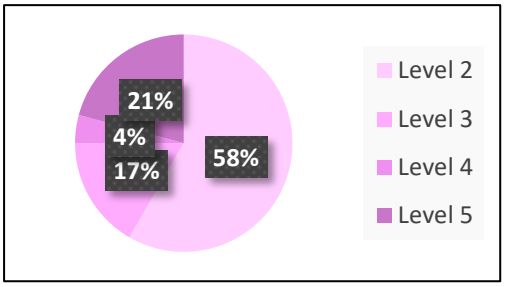

Figure 7.4a: Percentages of Betty's musical behaviours by level

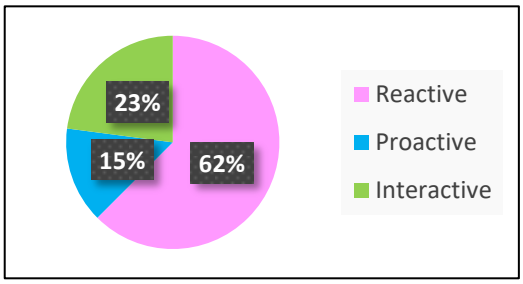

Figure 7.4b: Percentages of Betty's musical behaviours by domain

Figure 7.3 also illustrates the complex combination of the SoI-EY domains and levels within individual musical instances. The musical instances that contained SoI-EY ratings of multiple domains include the combinations of Reactive+Proactive (2 times) and Reactive+Interactive (6 times), demonstrating that Betty responded to sounds and music while making sounds by herself or with others. In particular, there was a clear pattern of musical instances rated with R5A and I2A (5 times), showing that Betty showed her recognition of musical pieces by vocalising and/or sound-making.

7.4 The examples of Ellen's and Betty's musical behaviours

The following subsections present examples of Ellen's and Betty's musical behaviours in the Reactive, Proactive and Interactive domains. Their musical behaviours are presented by each person at first, which demonstrates their individual characteristics.

7.4.1 Ellen's Reactive musical behaviours

Ellen's Reactive musical behaviours were mainly rated at Level 5, which represented her musical abilities to attend to and respond to whole musical pieces. There were various types of music to which Ellen was exposed and that stimulated her musical responses. These ranged from the popular songs playing on the TV to the drumming performance during the BBC Prom that the family attended. Ellen responded to musical pieces by dancing to them. She danced in different styles, such as free-style dancing that showed her understanding and reaction to the musical structures and features, and Ballet dancing that demonstrated her association between Western Classical music and a specific performing style in Western culture. Media seemed to play an influential role in stimulating her dancing activities. For instance, the form of dancing contest in a TV programme, such as in Strictly Come

Dancing[29] that the family watched regularly, along with her imagination, also seemed to reinforce her motivation to dance to music. The following musical instances provided examples of Ellen's dancing activities in various contexts:

> *Ellen loves dancing around when Strictly Come Dancing comes on the telly. We played at being the dancing judges and being the dancers.* (Ellen&Betty Diary [6], ㉚ – R5A)

> *Ellen had been dancing to the radio when we tune on to the classical music station. 'look mummy, I'm doing ballet and being a princess!', 'I'm doing a performance for you.'* (Ellen&Betty Diary [2], E⑲ – R5A,D)

> *In a dancing studio, Ellen and another three girls, all wearing Ballet dress, were walking around the classroom on the tips of their toes. They were holding their skirt out from their body while walking. They walked to the tempo of piano music playing by a pianist, which was slow in the beginning but then became faster. There was a teacher giving verbal instructions as well as demonstrating the gesture of holding the skirt. When the music ended, the teacher clapped twice to the last two beats and all of the girls stood in a row in front of the teacher, holding their skirts.* (Ellen Video [I3]-4, ㊶ – R5B,D) (Figure 7.5)

Figure 7.5 Ellen (the child in the front) walked to the tempo of music in a Ballet lesson dancing

In addition to dancing, Ellen also learnt the cultural meanings of musical pieces and performed them through drama. For instance, during the Christmas period, she had learnt the Christmas songs and nativity at her school (also see an example in 7.4.5):

> *She's also singing Christmas songs and making up performances (following the success of her school nativity).* (Ellen&Betty Diary [8], E㉒ – R5D&P5A)

[29] Strictly Come Dancing is a British television reality show of dance competition. Each group is scored by a panel of judges.

Overall, Ellen's Reactive musical behaviours demonstrated that she responded to whole musical pieces through dancing. Furthermore, she also learnt the cultural meanings and expressions of certain musical styles and pieces, such as Ballet dancing to Western Classical music and Christmas songs that came with the nativity performance. The cultural understanding of music was partially provided by the school, as well as the private dancing class. The musical instances that involved Ellen and Betty's musical responses together will be presented in Section 7.4.7.

7.4.2 Betty's Reactive musical behaviours

Betty's Reactive musical behaviours spanned from Level 2 to Level 5, which demonstrated her extensive musical ability to recognise and respond to musical pieces. The musical stimulation that she was exposed to included maternal singing and vocalisation, Ellen's singing, the recorded music playing from the electronic toys, music playing from the TV or radio and the live music from the concert that the family attended. With respect to Level 2 musical behaviours which were rated the most frequently, she responded to sounds and music by bodily movement or expression of her enjoyment, as described by the mother in the diary. The following musical instances provided examples of Betty's various musical responses at Level 2:

> *[I] sang [M]andarin song to Betty and her baby friend. They both enjoyed that. Betty listened whilst playing with her toys.* (Ellen&Betty Diary [1], B② – R2A)

> *Betty reacts pleasantly when one of her music toys started playing.* (Ellen&Betty Diary [1], B④– R2A)

> *Betty will nod her head whilst Ellen plays on her cello.* (Ellen&Betty Diary [8], B㉗ – R2A)

Furthermore, from the mother's observation, Betty was regarded to be more musically responsive when Ellen sang to her. She even copied Ellen's dancing style when responding to music:

> *She[']s responding well to music – particularly when Ellen sings. She sways from side to side, smiles and tries to sing along[,] but nothing [is] recognisable at this stage.* (Ellen&Betty Diary [9], B㉛ – R2B&I2A)

> *Betty loves to dance to music on the radio. She now does the 'Ellen's swaying' dance where she'll sway her head side to side instead of from the waist. She will try to spin and dance too.* (Ellen&Betty Diary [7], B㉘ – R2A)

Not only did Betty respond to a variety of sounds and music, she also responded to its patterned features, such as the beats of the music:

> *I took her without Ellen to Chinese music class and noticed that she seemed to blossom with the attention. She also started jiggling around when music with a heavy beat to it starts playing* (Ellen&Betty Diary [5], B⑯ – R3B)

In addition to the bodily movement or facial expression as Betty's musical responses, her mother Vicky observed that she also made the actions that corresponded to the lyric meanings of the Chinese children's songs that Vicky sang to her. Her actions might be in response to certain words, which represented her language development. However, in the musical aspect, she was able to link sounds with particular meanings. The actions that came with the songs might also enable Betty to recognise the songs and connect the tunes with particular meanings. The following musical instances showed Betty's gestures or actions in response to the Chinese children's songs, which represented her language and/or music abilities:

> *I still s[i]ng mandarin songs to her [e.g.] 'head shoulders knees and toes' - when I do, she will touch her head for 头[30].* Very cute! (Ellen&Betty Diary [8], B㉚ – R3D)

> *I sang 'little donkey' to Betty when we saw donkeys on our walk in New Forest and I could see her pretending to hold a whip in her hand which was part of the actions to the song. She also made a 'giddy up' motion whilst she was in the baby carrier on daddy's back.* (Ellen&Betty Diary [3], B⑫ – R5A)

> *at the moment at this stage, maybe [she] can't do it, but in two or three weeks she can do it. Like…sometimes we sing 'Tang Lao Xian Sheng You Kuai Di' (Old McDonald Had a Farm), and I have some puppet animals there, and she would put her hands in and shake it.* (Ellen&Betty Interview [3], B㊳ – R5A)

Betty became familiar with musical pieces not only through doing the actions, but the frequent exposure to the same musical pieces also contributed to her familiarity. According to the mother's report, the musical pieces that were familiar to Betty seemed to regulate her emotional states: on some occasions, she vocalised or danced to the familiar musical pieces, which featured her Interactive musical behaviours; in other occasions, she became calm when hearing familiar music:

[30] *The Chinese character 头 (tou) means head.*

Betty 'sang' with her sister who's listening to Frozen karaoke on iPad […] she basically just 'aaaaa' very loudly and for a few seconds longer when it comes to 'let it goooooooo'! (Ellen&Betty Diary [1], B③– R4A&I2A)

Betty continues to 'sing' in 'aaaa' to songs that she recognise[s] such as Fro[z]en's '[D]o you want to build a [snowman]' and '[L]et it go'. (Ellen&Betty Diary [4], B⑬ – R5A&I2A)

The little one, she recognises, she knows the song. When there comes Twinkle Twinkle, she does this [SWAYING]. (Ellen&Betty Interview [2], B㉑ – R5A)

I have given Betty's nursery a Chinese nursery song for them to play to Betty and they say that it's calmed her down when she's upset. (Ellen&Betty Diary [6], B⑲– R5A)

Betty will fall asleep when the cello song comes on and normally to calm her down we will put the [G]ruffalo songs on. (Ellen&Betty Diary [4], B⑭ – R5A)

In general, Betty's Reactive musical behaviours demonstrated that, at her age from 10M to 1Y5M, she was not only aware of sounds and music, but she also responded to their patterns, such as beats. Moreover, she recognised tunes and musical pieces and responded to them by doing corresponding actions or vocalising. The familiar pieces also seemed to function as an emotional regulator for Betty.

7.4.3 Ellen's Proactive musical behaviours

Ellen's Proactive musical behaviours were mainly rated at Level 5, although there were also musical behaviours rated at lower levels of 2, 3 and 4. According to the mother's report, as well as the observations from the video recordings, Ellen was engaged in a variety of sound-making and music-making activities, ranging from controlling sounds of musical media (Level 2) to singing and/or playing musical pieces on the cello (Level 5). The learning of cello techniques also showed her progression from making patterned sounds (Level 3) to playing the whole musical piece (Level 5).

Ellen sang throughout the day and on different occasions, such as being at home or on car journeys. She sang the songs that were familiar to her as well as made-up songs. She also made up lyrics to familiar tunes. With respect to singing the familiar pieces, her repertoire included the English nursery rhymes, Chinese children's songs, Disney princess songs, Gruffalo songs, Christmas songs and English pop songs, reflecting a wide range of musical exposure by Ellen. The following musical instances provided the examples of Ellen's singing of the songs known to her:

She can sing 'Yi Shan Yi Shan Liang Jing Jing'[31]*. She likes it, although I don't know whether she knows the meaning or not. Probably yes, as she can also sing the English one. She should know.* (Ellen&Betty Interview [1], E③ – P5A)

After lunch[,] Ellen started singing a pop song she heard from the radio. And she's humming to herself whilst sitting in the loo. (Ellen&Betty Diary [1], E⑩ – P5A)

The above examples showed that Ellen's singing was embedded in her social and cultural environment. Growing up in a multi-language environment, Ellen learnt the same song in different languages, which might enhance her musical exposure and understanding of the song. With regard to Ellen's fluent singing, Vicky attributed her confidence at school to successful singing (see 7.7.2.6).

In addition to singing her familiar pieces, Ellen also invented lyrics for her familiar songs or made up her own songs. Her made-up songs might derive from the tunes or lyrics of her familiar pieces, or from her previous listening experiences. The following musical instances demonstrated a range of her made-up singing activities:

Ellen tried singing the 'rabbit sleeping song' [,] creating her own lyrics. (Ellen&Betty Diary [1], E⑧ – P5B)

At another time, Ellen was singing 'lalalala' to a made up music and Betty started to copy Ellen. (Ellen&Betty Diary [3], E㉒ – P4A)

She even create[s] her own songs. Mainly piecing [together] various lyrics of different songs she knows (Ellen&Betty Diary [5], E㉘ – P5C)

Today in the car, we were talking about rhymes and rhythms. We sang a popular children's nursery song but changed the lyrics around. Ellen was inspired and says she's going to sing her own song...about how to be a good friend and don't be sad. I was driving so didn't manage to get a recording. (Ellen&Betty Diary [9], E㊹ – P5B,C)

'Sometimes when [Ellen] feels bored with the cello CD, she would start singing by herself in the back [seat]. She sang louder when I turn the volume louder [LAUGH]. So sometimes I just turn off the radio.' (Ellen&Betty Interview [3], E㊾ – P5C&I3B)

Overall, Ellen was capable of singing the songs, and she had a wide range of singing repertoire that was built up from her musical exposure. She also made up her own songs,

[31] 'Yi Shan Yi Shan Liang Jing Jing' is the nursery rhyme 'Twinkle Twinkle Little Star' in Chinese version.

which seemed to be referenced from her familiar tunes or lyrics. The lyrics of the songs seemed to play an influential part in her made-up singing, as she would either change lyrics for her familiar songs or use the familiar lyrics for her made-up tunes.

Ellen's cello practice was a major event that was constantly reported throughout the diary account and the interviews. Ellen had been learning the cello for two months when they started participating in this research. Throughout the six months of research participation, Ellen progressed from pressing and plucking the strings (P3A) to playing the whole piece of Twinkle Twinkle Little Star (P5A), as reported by the mother. At an earlier stage, her practice was more focused on the techniques of playing the cello, such as plucking the strings and using the bow. The following instances demonstrate that she was learning the technique of playing, which involved repetitive sound-making. Thus, these musical behaviours were rated at Level 3:

> *Ellen is learning cello now […] she just learnt plucking. Now I am teaching her to press the strings. [The teacher] won't teach her music until she can play with ease.]* (Ellen&Betty Interview [1],E① – P3A)

> *Practi[s]ed cello with Ellen in the morning. She's very reluctant to practice bowing. Encourage her to pretend that she's playing the tunes from Frozen when we practi[s]ed 'jumping' on the string with her cello hand. She quite enjoyed that and was willing to practise.* (Ellen&Betty Diary [1], E⑨ – P3A)

> *Ellen practi[s]e[d] cello for 10 minutes - very reluctant child but got some cooperation. She also decided to 'compose' something different (it sounded familiar to the other songs she's practising[]).* (Ellen&Betty Diary [1], E⑦ – P4A)

Later on, she started learning to play Twinkle Twinkle Little Star, progressing from playing fragments (Level 4) to playing the whole piece (Level 5). At a later stage of research participation, she also progressed from plucking the strings to using the bow to play. Ellen's singing along while playing the cello, which featured the multiple domains of Interactive and Proactive, was interpreted by the mother as her enjoyment of playing the cello (see Section 7.4.5). Ellen's musical behaviours of playing the cello were reported by the mother as well as revealed in the video recording (Figure 7.6):

> *We continue to practi[s]e cello with Ellen. This week we are learning to play '[T]winkle [T]winkle' by plucking the strings. She's learning to pluck the following notes in a sequence: D D A A B B A. And then she gets to put a necklace beads onto the blue*

string. The next sequence is: G G F[♯] F[♯] E E D. And she gets to put a bead onto the orange string. (Ellen&Betty Diary [4], E㉔ – P4C)

With regards to Ellen, she finally would try to play 'twinkle' in all [four] segments rather than [one] individual segment each. She even tried to sing-along whilst playing. (Ellen&Betty Diary [7], E㊴ – P5D&I5A)

Figure 7.6: Ellen's was practising 'Twinkle Twinkle Little Star' at home (Ellen and Betty Video [I3]-3)

Ellen not only learned the technique of playing the cello, she also learned to read the notation that represented the symbol system for Western musical culture:

She's also learning to read simple music notes and clapping to different rhythms. (Ellen&Betty Diary [8], E㊶ – P4A)

Whilst most of Ellen's Proactive musical behaviours were at upper Levels, she was also engaged in sound-making activities, which sometimes contained particular meanings. For instance, it was reported by the mother that Ellen would click her tongue to imitate the 'tick-tock' sounds appearing in one of the Frozen songs (Ellen&Betty Diary [3], ㉓– P3D). In addition, a video recording showed that Ellen was controlling the music playing from an electronic toy by pressing the button, although this Proactive musical behaviour seemed to be driven by a desire for dancing (Ellen&Betty Video [I3]-2, ㊼ – R5A&P2A). Ellen controlled the music as a result of the desire to dance to the music.

Overall, Ellen's Proactive musical behaviours showed the variety of her singing and music-making activities, from operating the electronic musical toy to playing the simple musical piece on the cello. For singing behaviours, Ellen not only sang her familiar pieces, but she also altered or made up music, in which lyrics seemed to play an important role to connect her previous musical experiences with her new musical creations. With respect to cello learning, Ellen's progression in technique for playing the cello, as well as attitudes towards practising, were perceived by the mother. The learning of the cello also introduced Ellen into the musical culture of Western Classical music through playing a Western musical instrument and learning the Western notation system.

7.4.4 Betty's Proactive musical behaviours

Betty's Proactive musical behaviours were mainly rated at Level 2, which showed her musical ability to make a variety of sounds. She made sounds by vocalising or playing on different musical objects, such as the electronic musical toys and the cello. Betty expressed herself by vocalisation, which could be observed in a video recording. In the recording, she vocalised 'ah, ah' when walking to Ellen to join in her dancing (Ellen and Betty Video [I2], B⑳ – R2A&P2A). Betty also made particular sounds of 'clicking the tongue', which Vicky perceived as an imitation from Ellen's previous musical behaviour:

> *Betty also learnt to make clicking sound by flicking her tongue. This was from copying Ellen again. There's a song in 'do you want to build a snowman' (from Frozen) where you click your tongue to mimic 'tick tock' of the clock.* (Ellen&Betty Diary [3], B⑪ – P2A)

Betty's vocalisations of patterned sounds were regarded to be meaningful, which might also be related to her language development:

> *[Bethany vocalised] 'mah mah mah mah' when she is hungry. She would point at you.* (Ellen&Betty Interview [2], B㉓ – P3A,D)

Betty's sound-making activities involved playing with the electronic musical toys at home and playing on Ellen's cello. There were various electronic musical toys available to Betty in the home environment. Vicky described the musical toys that Betty had enjoyed playing:

> *She quite like the one […] one side is a keyboard with three keys, and when you turn over it's a telephone. She quite likes it. […] She likes the telephone more. […] It's like duh duh duh duh. [...] It plays different rhythms when you press it. Or...there is a toy that it spins around when you put the balls into it. It plays music. She likes it too. There is also a book. It plays music when you open it.* (Ellen&Betty Interview [2], B㉕ – P2A)

[Betty] is interested in music. She would turn on her own music songs [of the toy]. (Ellen&Betty Inteview [3], B㊵ – P2A)

Related to the last musical instance above, two consecutive video recordings showed that Betty was pressing the button of an electronic toy and dancing to music, and this was then joined in by Ellen (see 7.4.7 for this example). The video recordings showed that Betty's sound-making activity (pressing the button) was motivated by her enjoyment of dancing to music. In addition, Betty also explored sounds by playing with Ellen's cello, with knowledge of the gestures of playing:

She also likes to sit on the cello stool and hugging[sic] the cello whenever we set things up for Ellen's cello practice. She tries to pluck the string as well and knows which is the cello hand and which is the bow hand. (Ellen&Betty Diary [9], B㊷ – P2A)

In general, Betty's Proactive musical behaviours demonstrated her musical abilities of vocalising and sound-making, which were supported and shaped by her musical environment. The musical materials available at home, such as the electronic toys and cello, shaped her experiences of sound exploration. Her sound-making behaviours on the cello with particular gestures further demonstrated her cultural understanding of playing a Western instrument. Betty's independent vocalisation was perceived to be learned from Ellen's previous sound-making activities, showing a process of musical learning through imitation. The vocalisation of repetitive words to symbolise things might also be related to her language development.

7.4.5 Ellen's Interactive musical behaviours

Ellen's Interactive musical behaviours were mainly rated at Level 5, demonstrating that she sang or played musical pieces with others. The musical interaction that involved singing or music-making activities occurred in various contexts, including group concert, duet performances and interacting musically to music playing from media or being played by herself.

Ellen was engaged in group singing activities. These occurred when she played with friends on a playdate or when attending a local music group, as observed and reported by the mother:

Took both girls to [the] Chinese playgroup. Ellen sang to the songs that she had previously learnt[,] but not keen on others. (Ellen&Betty Diary [1], E㉕ – I5A)

'She is now rehearsing for Christmas nativity [in the school]. Last Thursday, we went to her friend['s] house. There were five or six children, all from the same school class. Suddenly, I heard them singing this song, [sing] we bring for three gifts…I don't know, I have never heard her singing like this. This is the first time. […] It is like when they are together, and they said, 'Let's sing this song'. They sang and doing the actions, queuing and bringing the gift to Jesus Christ […] I have never seen her, individually at home doing it, it was only when she is with her friends, and all of a sudden [they sang this song together].' (Ellen&Betty Interview [2], E㊱ – R5D&I5A)

Both of the instances above demonstrated the importance of previous musical exposure and the contextual circumstance in stimulating Ellen's engagement in group singing. In the first instance, Ellen only sang the songs that were familiar to her. In the second instance, Vicky noticed a different singing repertoire for Ellen when she was with her friends. The Christmas songs might be learnt from school, where Ellen was likely also to be engaged in group singing.

Furthermore, Ellen had taken part in a group concert held by the Suzuki Music School, in which she was playing the cello with a group of children. Vicky described that, at the concert, Ellen was able to play 'Twinkle Twinkle Little Star' by plucking the D string. In another song 'Rigadoon', Ellen did different performances to different parts of the song, such as plucking the G string, shouting 'Rigadoon' and swaying her body (Ellen&Betty Interview [2], E㉟ – R5B&I5B). This instance also demonstrated Ellen's understanding of simple musical structure. In general, Ellen's engagement in group musical activities reflected different forms of group singing and/or music-making, ranging from adult-led sessions or performances to child-led activities during free play. Ellen's musical behaviours also seemed to be context-dependent, as she exhibited certain musical behaviours in particular group contexts.

In addition to group singing and music-making, she was also engaged in musical interaction with another person. In the home environment, Ellen sang with her mother Vicky, as well as playing a duet with Vicky. With respect to singing, Vicky explained that she did not sing to Ellen as frequently as she did before because 'she is too old'. Nevertheless, she sang with Ellen when there were external reasons, such as being asked by Ellen about the songs, or singing together to Betty:

This weekend, she brought her school pet home, which is like a soft toy, it's a dog, it's a doggy. Maybe the dog reminded her of this song, How much is that dog in the window. She vocalised 'woof woof' while I sang. She did not start until I sang a few phrases. […]

She will listen, and then [when I get] to the chorus, she will sing. [SING] How much is that dog in the window, and then she will 'woof woof'. She did not sing the lyrics. (Ellen&Betty Interview, E㊲ – R5D&I4C)

Sometimes we sing songs together to Betty. She would sing with me. She would say [to Betty], 'The sister is singing Chinese [children's] songs to you [LAUGH]. (Ellen&Betty Interview[1], E⑥– I5A)

With respect to interactive music-making between Ellen and Vicky, they played a duet piece given by the cello teacher in order to boost her motivation to practise. In the duet, Vicky played the piano part to accompany Ellen's cello playing (E&B Interview [3], E㊺ – I5B) (see 7.7.2.3 for the example). Furthermore, the musical interaction between Ellen and Vicky also occurred when Ellen was practising her cello piece, as Vicky would remind Ellen of the next note by humming:

When [Ellen] is playing the cello, [SING] duh duh duh duh [DDAA], she would forget that B, [SING] duh duh duh [BBA]. So every time I tell her [SING] duh [B], and she would know which [note] I want. She can listen. Thus, I feel, [she is] pretty good. (Ellen&Betty Interview [3], E㊻ – P5D&I3B)

Ellen was not only engaged in musical interaction with other people but also interacted musically with music that was playing from various media, such as CDs, radio, and a Karaoke app on the iPad, on her own or with others. The following musical instances provided the examples of Ellen's musical interaction with different musical types and media:

She has phonics music [CD]. Now she is learning to sing, [SING] a, a, a is for the arms [LAUGH]. (Ellen&Betty Interview [1], E④ – I5A)

Ellen asked to play the jolly phonics CD after breakfast. She sang happily to it whilst I clear up breakfast. (Ellen&Betty Diary [1], E⑪ - I5A)

Ellen and her friend sang together to Frozen. (Ellen&Betty Diary [1],E⑫ – I5A)

Ellen and a girl she met at a BBQ we went to sang to Frozen on her iPad. It's a very bonding song. (Ellen&Betty Diary [1], E⑰ – I5A)

Sometimes when I turned on the radio [in the car], she would say 'I know this song'. […] I think popular music, [the ones] to be more resonate, or those upbeat music […] yes, she would sing along sometimes. (Ellen&Betty Interview [2], E㉞ – R5A&I4B)

[Ellen] had also kept asking for music CD rather than audio story CDs. She nearly got all the lyrics on the [Gruffalo] song CD. (Ellen&Betty Diary [2],E⑳ – I5A)

The examples above demonstrate Ellen's interaction with a wide range of media by singing along with music playing from the media. Ellen's musical exposure and interactive experiences seemed to be shaped by the availability of the media in the settings and its physical nature. For instance, the portable nature of tablets and visual provision along with music was thought to be likely to stimulate Ellen to watch and sing along more often, and Vicky described it as 'bonding'. Moreover, the function of repeated playing, such as CDs and tablets, also enabled Ellen to master the song through repetitive listening and singing along, which could be found in the last musical instance above.

In addition, Ellen sang to music that was played by herself. It was reported by Vicky that she sang along with music when playing Twinkle Twinkle Little Star on the cello, which Vicky regarded as an improvement with regards to her enjoyment of music:

Ellen had a really good cello lesson today - she's now singing to '[T]winkle' as she plays it on the cello. I see this [as] a great improvement as [I] hope it means she's enjoying playing an instrument. She also learning to use the bow on the cello to play '[T]winkle' (she's currently plucking the tune out instead). (Ellen&Betty Diary [8], E㊵ – P5D&I5A)

Overall, Ellen sang or played musical pieces interactively in a range of contexts, from group concerts to singing along with her own music-making. Group singing or music-making seemed to establish a musical identity as the group would carry the repertoire from one setting to another. This was exemplified when Ellen and her school friends sang songs that she never sang by herself. The media and technology available to Ellen seemed to be influential to her musical development, as the function of repetitive playing gave Ellen more opportunities to sing along and master the songs.

7.4.6 Betty's Interactive musical behaviours

Betty's Interactive musical behaviours were rated at Levels 2 and 3, which represented her musical abilities to interact musically by making sounds or vocalising and copying sounds in a deliberate way. She vocalised in response to speaking, singing or her familiar tunes. For instance, in a video recording, it was observed that Betty started vocalising after Vicky gave

verbal instruction on Ellen's cello practice (Ellen&Betty Video [I3]-3, B㉝ – I2A). Betty also copied syllables or words deliberately from Ellen's singing, or to the music familiar to her:

> *At another time, Ellen was singing 'lalalala' to made-up music and Betty started to copy Ellen. Betty managed to get a 'la' out. You could see that she was playing with her tongue to try forming the sound.* (Ellen&Betty Diary [3],B⑩ – I3B)

> *I heard a distinct 'gruffalo' during one of the songs in the car.* (Ellen&Betty Diary [5], B⑮ – I3D)

Betty's vocal imitation of sounds was also perceived by Vicky as the process of language learning, which Vicky was devoted to through singing Chinese children's songs to her:

> *Sometimes when I want to emphasise, introduce something to her, I would sing her a [...] like last night, she heard a dog barking, and she said dog, and I said 'gou gou' (puppy), and I sang 'Ha Ba Gou' (Pug Dog) to her, and she gradually said 'gou', rather than 'dog'.* (Ellen&Betty Interview [3], B㉟ – I3B)

In addition to using her own voice, Betty also tried to make sounds in response to sounds or music. For instance, she tried to join in when Ellen was playing the cello:

> *She always tries to pluck on the cello strings[,] albeit at the same time as when Ellen plays.* (Ellen&Betty Diary [8], B㉘ – I2A)

In general, Betty vocalised or made sounds differently in response to various musical stimuli. In the context of musical exposure, she imitated sounds deliberately when there were simple syllables to follow, such as 'la' or 'gou'. Frequent listening also seemed to contribute to her ability to imitate words that contained more syllables, such as 'gruffalo'. She vocalised vowel sounds (ah) in response to the tunes that were familiar to her. The sound-making behaviour also took place when Ellen played the cello, demonstrating Betty's motivation to join in Ellen's music-making.

7.4.7 Ellen's and Betty's musical behaviours in the context of social interaction

Ellen and Betty responded to music together. There were a few occasions in which both of them were dancing to music as a joint musical activity. These took place when they stayed at home, as well as when they went out for musical events. Their musical responses are exemplified in the following two consecutive video recordings (Betty Video [I3]-1 and Ellen&Betty Video [I3]-2):

In the living room with a cooking programme showing on TV, Betty was dancing to digital music playing from an electronic toy behind her. She swayed side to side happily. She turned back to press the button when the music was about to finish. She also vocalised while dancing, which was echoed by Vicky. (Betty Video [I3]-1, ㉞ – R5A,B&P2A) (Figure 7.7a)

Ellen and Betty were dancing together to digital music playing from the electronic toy behind them. Ellen, who dressed like Disney princess Elsa, looked at Betty and copied her dancing style of swaying the body and arms gently. Both girls were happy and Ellen laughed while dancing. When the music finished, Ellen pressed the button to play and dance to the next piece, and she did it for a few times. Betty was looking for the button in the middle of the musical pieces. Ellen danced faster when the tempo of the musical piece was faster. (Ellen and Betty Video [I3]-2, Ellen: ㊼ – R5A&P2A; Betty: ㉞ – R5A,B&P2A) (Figure 7.7b)

Figure 7.7a: Betty was dancing to music playing from a musical toy

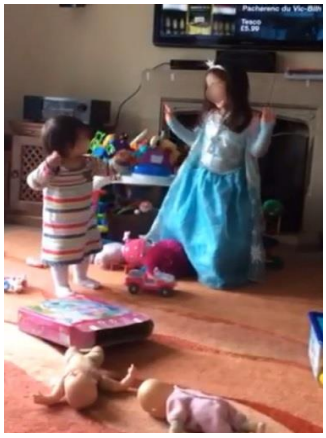

Figure 7.7b: Betty and Ellen were dancing together to music playing from a musical toy

The consecutive video recordings, in which Betty's solely musical engagement was then joined by Ellen, demonstrated that Ellen was able to accommodate her dancing style to meet Betty's gross motor skill development. Moreover, they also had social interaction, such as making eye contact with each other. Ellen's full engagement to interact with Betty musically and socially seemed to enhance Betty's attention and responses to the music, thus, a higher level of Reactive musical behaviour was rated in Betty's case. It is also worth noting that, while imitating Betty's dancing, Ellen was able to further respond to the temporal features of the music accordingly, which was not observed in Betty's case. This musical instance could

be compared with another musical instance, in which Ellen was dancing energetically to the upbeat pop song ‘Everybody’s Awesome’, with Betty joining in for a short while, but walking away in the end (Ellen and Betty Video [I2]):

> *In the dark living room with TV on, Poppy was dancing energetically to the popular song 'Everything's Awesome' playing on the TV. She not only danced to the upbeat feature of the song but also hummed along with a few notes in the end of the musical phrases, such as 'awesome'. Betty walked to join in Ellen's dancing and vocalised. She spun her body and then fell down. She did not continue dancing but walked away. Vicky gave feedback throughout the dancing, such as 'Oh wow, look at that' and 'shakey shakey' to Ellen's dancing, and 'Here we go, here we go' when Betty walked to Ellen. (*Ellen and Betty Video [I2], Ellen: ㉜ – R5A&I4B; Betty: ⑳ – R2A&P2A)

Figure 7.8: Ellen and Betty were dancing to a popular song

In this instance, Betty lost her interest in dancing to music, which might be due to the incident of falling down, along with the lack of interaction and support from Ellen, who concentrated on dancing by herself. These two musical instances demonstrated Ellen’s role, not only as Betty’s musical playmate, but also a facilitator of Betty’s musical behaviours. In addition, the easy-listening feature of the digital music in the former instance might also be beneficial to Betty’s musical responses in the aspect of movements to music.

When Ellen and Betty responded to music together, Ellen seemed to play a supporting role in Betty’s musical response, particularly when they had positive social interaction. Ellen’s and Betty’s musical responses were stimulated by a wide range of musical exposure as well as their mutual interaction. Ellen’s and Betty’s Reactive musical behaviours had distinguishable features, but also had mutually-affected aspects.

7.5 The analyses of Ellen's musical development

The following sections present the analyses of Ellen's musical development between her age of 4Y3M and 4Y9M from different perspectives. The analyses were based on the 62 SoI-EY ratings that were coded by the researcher according to the musical instances reported by the mother through diary entries and interviews, as well as observed by the researcher in 4 video recordings provided by the mother. The total reported period spanned 29 weeks, and the analyses were undertaken on a weekly basis from the day of the first interview, which is regarded as week 0. In addition to week 0 that represented the first interview, there were data entries (diary account and interviews) on weeks 2, 3, 5, 7, 8, 11, 17, 19, 21, 25 and 29 throughout the reported period. Sections 7.5.1, 7.5.2 and 7.5.3 present the longitudinal data of weekly SoI-EY levels within each domain. Section 7.5.1 demonstrates the frequencies of SoI-EY ratings at different levels throughout the reported period; Sections 7.5.2 and 7.5.3 present the line charts and scatter plots of the weekly mean score of Ellen's SoI-EY levels over the reported period, demonstrating the variance and overall trends of Ellen's development respectively. Table 7.4 presents Ellen's weekly mean score for each domain. In each domain, the mean score in individual weeks was generated by the sum of the levels divided by the number of the ratings. Section 7.5.4 reported the evidence of Ellen's musical development perceived by the mother. The different analytical perspectives seek a comprehensive understanding of Ellen's musical development.

Table 7.4: The average score of Ellen's SoI-EY rating in each domain over 29 weeks

Week	Reactive	Proactive	Interactive
0	5	4.33	5
2		3.63	5
3	5		5
5	5	3.5	
7	5	4	
8	3	4.67	
11	5	5	
17	5	5	4.4
19		5	5
21	5	4.67	5
25		5	
29	5	4.25	3.67

7.5.1 The frequencies of Ellen's musical behaviours over time

Figures 7.9a, 7.9b and 7.9c illustrated the frequencies of Ellen's SoI-EY ratings over 29 weeks through three separate bubble charts. The number inside the bubbles, which is also visualised by the size of the bubbles, accounts for the number of the SoI-EY ratings in the individual week. Figure 7.9a shows that Ellen's Reactive musical behaviours were mostly rated at Level 5 throughout the reported period, with a higher frequency in Week 17. Figure 7.9b illustrates that, in the Proactive domain, there were Level 5 musical behaviours throughout the reported period with various frequencies. Furthermore, Levels 3 and 4 musical behaviours were reported more frequently in the early weeks, reflecting Ellen's basic technical practices on the cello, according to the corresponding musical instances. Figure 7.9c demonstrates that, whilst there were Level 5 Interactive musical behaviours throughout the reported period, there was an absence of these between Weeks 3 and 17. This might be related to Ellen's accidental deleting of the Karaoke app on the iPad that she frequently used to sing along to, as reported by Vicky in the interview. In general, the frequencies of Ellen's SoI-EY ratings demonstrated that her Level 5 musical behaviours were present consistently throughout 29 weeks in all of the three domains. Compared with the Reactive and Interactive domains, there was more variance of Levels in the Proactive domain as a result of her cello learning that required patterned music-making as technical practices (Level 3). The contextual factors, such as unavailability of media that could have stimulated Ellen's interactive musical engagement, in Ellen's case, seemed to play a role in affecting her interactive musical behaviours.

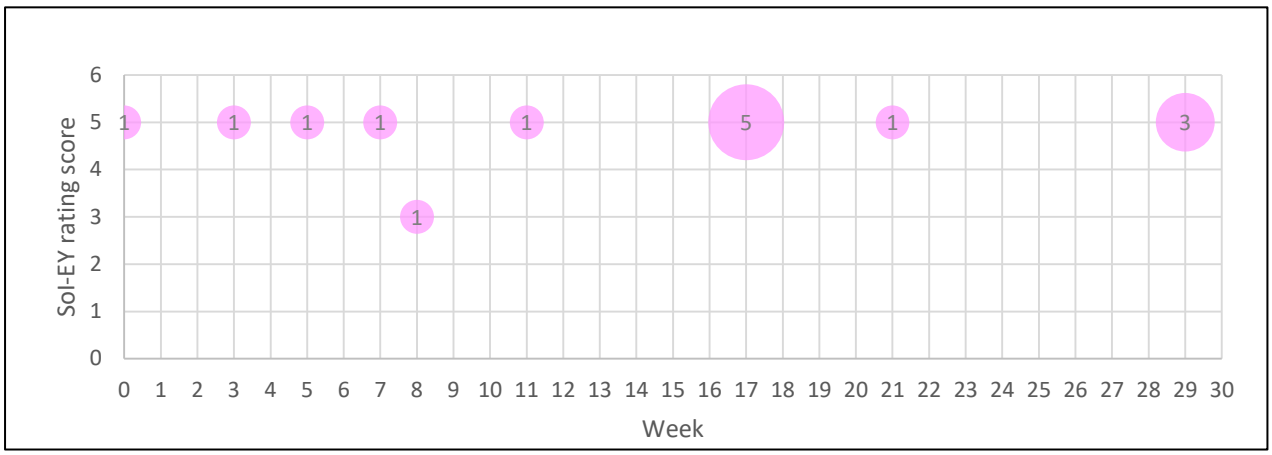

Figure 7.9a: The bubble chart of Ellen's musical behaviour in the Reactive domain

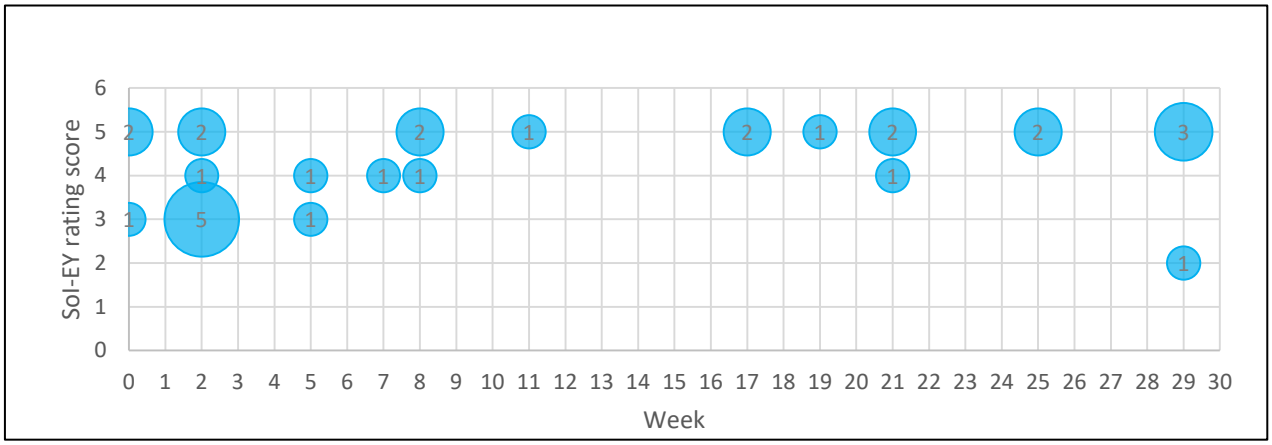

Figure 7.9b: The bubble chart of Ellen's musical behaviour in the Proactive domain

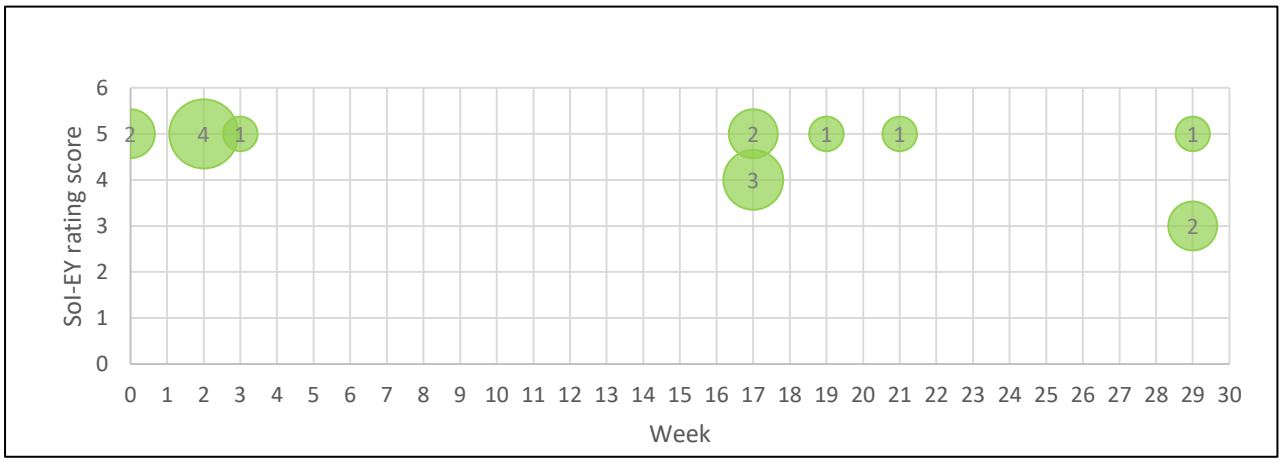

Figure 7.9c: The bubble chart of Ellen's musical behaviour in the Interactive domain

7.5.2 The average levels of Ellen's musical behaviours over time

Based on the mean score of weekly SoI-EY level (Table 7.4), Figures 7.10a, 7.10b and 7.10c illustrate the average levels of Ellen's musical behaviours in each week over 29 weeks of the reported period. Figure 7.10a shows that, in the Reactive domain, Ellen's musical behaviours stayed stable at Level 5, with a single drop point in week 8. Figure 7.10b demonstrates that, in the Proactive domain, the average level of Ellen's musical behaviours stayed between 3 and 5, with an increase from week 5 to week 11 and a generally stable feature around Level 5 after week 11. Figure 7.10c shows that, in the Interactive domain, Ellen's average level remained at level 5 from the beginning, while the level dropped between weeks 21 to 29. A few factors were considered to be related to the dropping of average levels over time. The nature of musical behaviours to be reported by the mother might affect the average level by domain. For instance, in the musical instances reported in week 29, Ellen's interactive musical behaviours at lower levels were embedded in her singing activities, which were rated at Level 5 in the Proactive domain. In other words, within a single musical instance, Ellen was exhibiting musical behaviours of different levels of each domain – Level 5 in the Proactive domain and Level 3 in the Interactive domain. Moreover, the dropping and increasing features in the Proactive domains reflect different stages of Ellen's cello practice from breaking-down practices that involved playing patterned sounds to playing the musical piece.

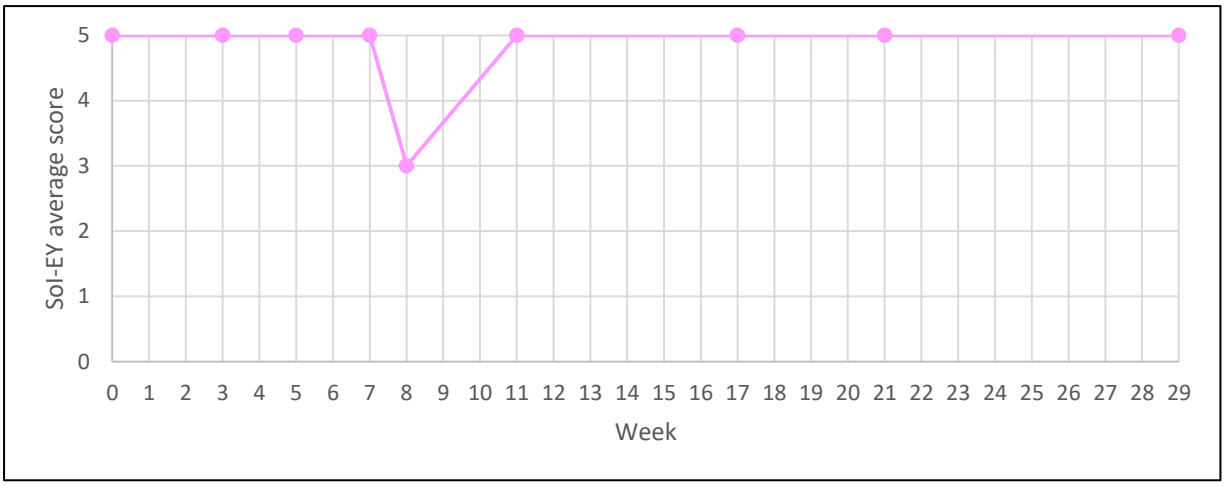

Figure 7.10a: The line chart of Ellen's musical development in the Proactive domain over 29 weeks

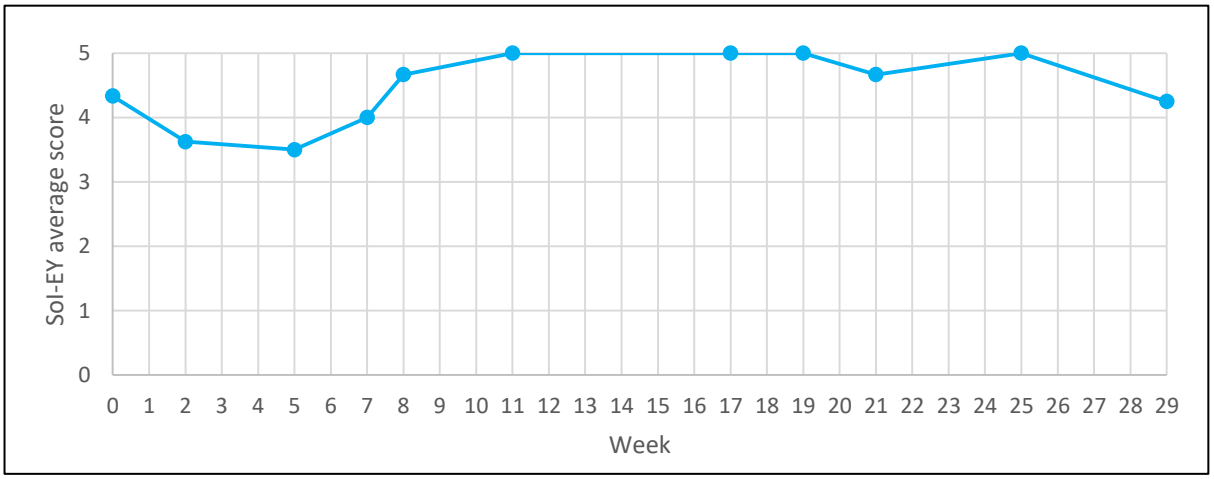

Figure 7.10b: The line chart of Ellen's musical development in the Proactive domain over 29 weeks

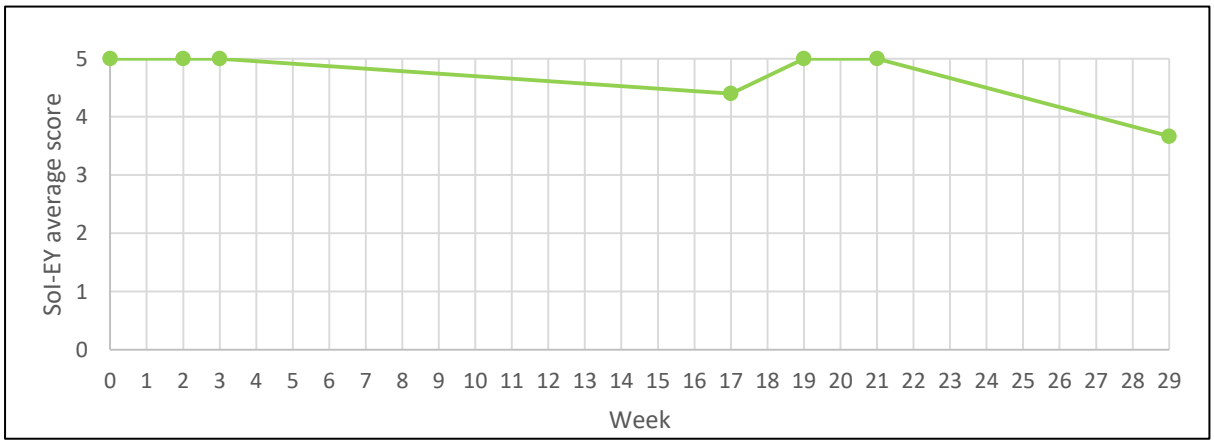

Figure 7.10c: The line chart of Ellen's musical development in the Interactive domain over 29 weeks

7.5.3 The correlation analyses of Ellen's musical behaviours over time

Based on the weekly mean score that represents the weekly average SoI-EY level (Table 7.4), Figures 7.11a, 7.11b and 7.11c illustrate the trendlines that indicate the general direction of progress of Ellen's SoI-EY levels over the reported period. In Figure 7.11a, the trendline generally remains stable at Level 5 in the Reactive domain (R^2=0.0166), possibly due to a ceiling effect; In Figure 7.11b. the trendline illustrates a radiant increase towards the advanced level of Proactive musical behaviours (R^2=0.2929); . In Figure 7.11c, the trendline shows a decrease between Level 5 and 4 (R^2=0.4609). The decrease might be due to fewer opportunities being provided to Ellen for musical interaction in the later stage of the reported period. The correlation analyses between the variable of Ellen's SoI-EY average level (mean score) and the variable of time indicated no statistically significant correlations among Reactive (r=0.129, p=0.741, n=9), Proactive (r=0.542, p=0.085, n=11) and Interactive (r=-0.679, p=0.094, n=7) domains. This might be explained by the variety of the SoI-EY levels being exhibited in Ellen's reported and observed musical behaviours throughout 29 weeks of the reported period, which also demonstrates that the musical development moving towards higher levels, in Ellen's case, is not necessarily a linear process, as it might be affected by the opportunities of musical engagement provided to Ellen, and other contextual factors that played a role in her musical development.

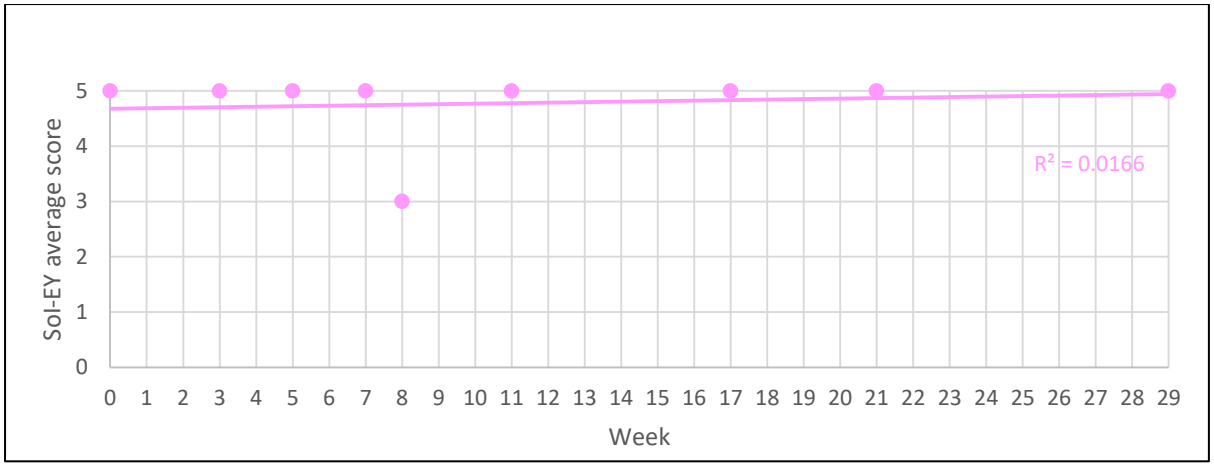

Figure 7.11a: The scatter plot of Ellen's musical development in the Reactive domain

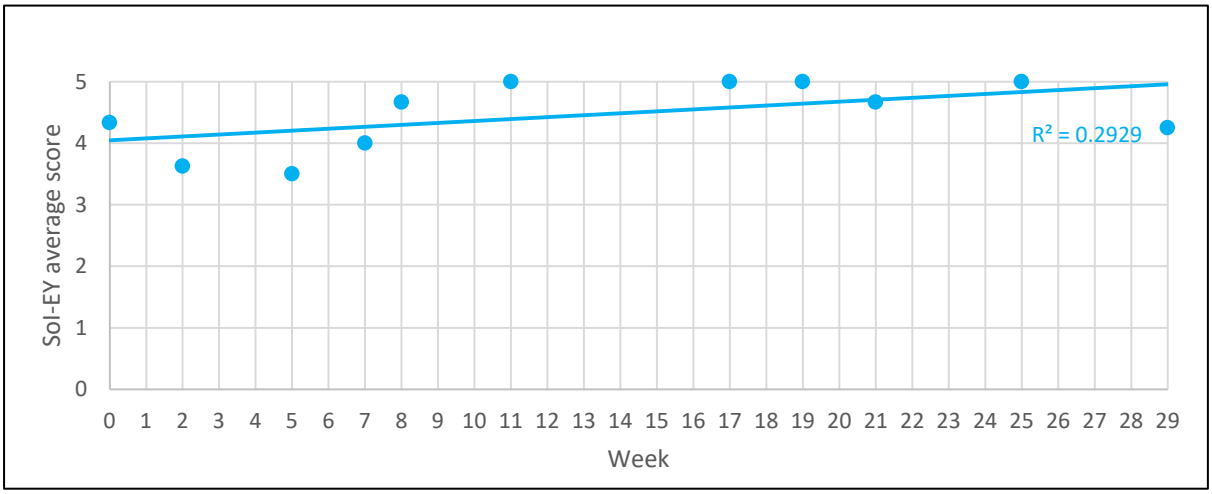

Figure 7.11b: The scatter plot of Ellen's musical development in the Proactive domain

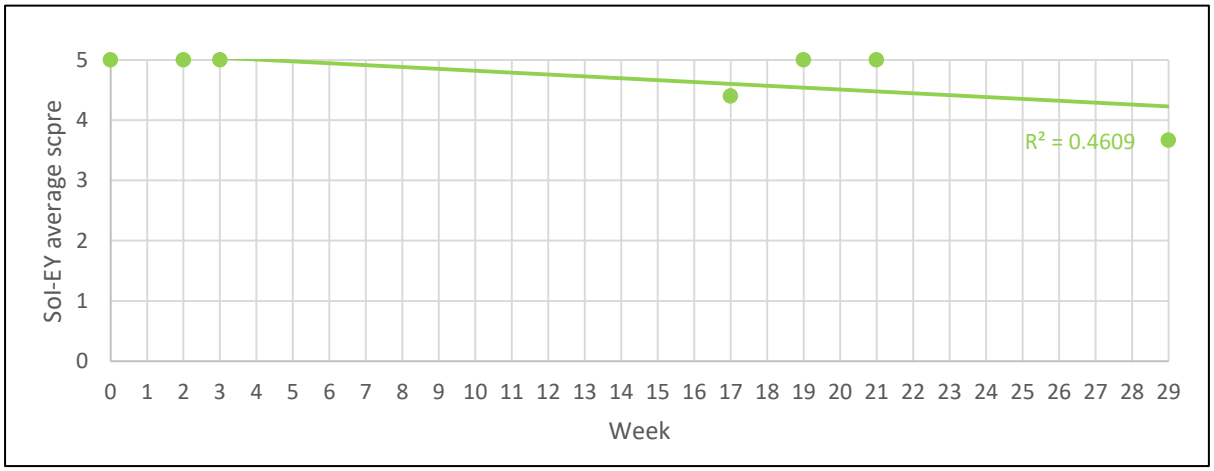

Figure 7.11c: The scatter plot of Ellen's musical development in the Interactive domain

7.5.4 Ellen's musical development perceived by the mother

In addition to the analyses of Ellen's SoI-EY ratings over time, the description from the mother regarding aspects of Ellen's musical progress was also analysed through the lens of the SoI-EY framework in order to gain a comprehensive understanding of Ellen's musical development.

As perceived by Vicky, Ellen's musical progression was explicit in her cello learning. In the final interview, for example, Vicky described that Ellen's cello skills had progressed in many aspects, such as a progression from plucking to using the bow and better control of her fingers when pressing the strings. Furthermore, as reported in the diary, Ellen's musical improvement also included singing along with her own music-playing:

> *Ellen had a really good cello lesson today – she's now singing to '[T]winkle' as she plays it on the cello. I see this a great improvement as [I] hope it means she's enjoying playing an instrument. She also learning to use the bow on the cello to play '[T]winkle' (she's currently plucking the tune out instead) (Ellen&Betty Diary [8])*

Overall, Ellen's cello learning underwent several stages: 1. Technique practice of plucking and finger jumping (Proactive Level 3); 2. Playing musical fragments by plucking (Proactive Level 4); 3. Playing the whole musical piece, from plucking to using the bow (Proactive Level 5); 4. Singing along with her own music-playing (Proactive Level 5 and Interactive Level 5). Furthermore, following the Suzuki method, Ellen's cello learning process was supported by a familiarity with the song through repetitive listening prior to playing the song, which demonstrated the role of Ellen's Reactive musical abilities in supporting her Proactive musical development.

7.5.5 Summary

This section presented Ellen's musical development from different analytical perspectives. Through the examination of Ellen's SoI-EY ratings in terms of their frequencies and weekly mean score over 29 weeks, the findings indicated distinctive features in each domain. In the Reactive domain, Ellen's musical behaviours remained at Level 5, demonstrating her musical abilities in responding to musical pieces and showing an understanding of the social and cultural meaning of music. In the Proactive domain, there was a shift towards advanced musical levels, which mainly reflected her progression in learning the cello from making patterned sounds to playing musical pieces. With regards to singing ability, she was able to sing numerous songs independently, as reported by the mother, and this featured her Proactive Level 5 musical behaviours. In the Interactive domain, there was a decrease in the SoI-EY level, possibly due to less opportunities for musical interaction, such as the

unavailability of the media that Ellen used a lot in playing music and singing along with in the early stage of the participation. This also reflected the role of media in shaping Ellen's musical behaviours and development in the Interactive domain. Ellen's musical development, from the mother's perspective, revealed the complex shifts of SoI-EY domains and levels when it came to instrument learning. In Ellen's case, a reported progress that featured a shift from Level 3 to Level 5 in the Proactive domain was demonstrated. This was supported by her Reactive musical ability of familiarity with musical pieces. Further improvement was perceived by the mother when her Interactive musical behaviour of singing was integrated into her cello playing. Overall, Ellen's musical development demonstrated constancy and progression, as well as regression in terms of the SoI-EY levels. As the SoI-EY ratings were generated from the musical instances that were largely reported by the mother, Ellen's musical development also reflected the mother's perception of Ellen's musical behaviours.

7.6 The analyses of Betty's musical development

The following sections present the analyses of Betty's musical development between her age of 10M and 1Y5M in different perspectives. The analyses were based on the 48 SoI-EY ratings that were coded by the researcher according to the musical instances reported by the mother through diary entries and interviews as well as observed by the researcher in 3 video recordings provided by the mother. The total reported period spanned 29 weeks, and the analyses were undertaken on a weekly basis from the day of the first interview, which is regarded as week 0. In addition to week 0 that represents the first interview, there were data entries (diary account and interviews) on weeks 2, 3, 5, 7, 8, 11, 17, 19, 21, 25 and 29 throughout the reported period. Sections 7.6.1, 7.6.2 and 7.6.3 present the longitudinal data of weekly SoI-EY levels within each domain. Section 7.5.1 demonstrates the frequencies of SoI-EY ratings at different levels throughout the reported period; Sections 7.6.2 and 7.6.3 present the line charts and scatter plots of weekly mean scores of Betty's SoI-EY levels over the reported period, demonstrating the variance and overall trends of Betty's development respectively. Table 7.5 presents Betty's weekly mean score by each domain. In each domain, the mean score in individual weeks was generated by the sum of the levels divided by the number of the ratings. Section 7.6.4 reported the evidence of Betty's musical development perceived by the mother. The different analytical perspectives seek a comprehensive understanding of Betty's musical development.

Table 7.5: The average score of Betty's SoI-EY rating in each domain over 29 weeks

Week	Reactive	Proactive	Interactive
0	2		
2	2.67		2
3	2		
5	3.5	2	3
7	5		2
8	3		3
11	5		2
17	3.5	2.33	2
19	2		
21	2.33		2
25	2	2	2
29	4	2	2.5

7.6.1 The frequencies of Betty's musical behaviours over time

Figures 7.12a, 7.12b and 7.12c illustrated the frequencies of Betty's SoI-EY ratings over 29 weeks through bubble charts. The number inside the bubbles, which is also visualised by the size of the bubbles, accounts for the number of the SoI-EY ratings in the individual week. Figure 7.12a illustrates that Betty's Reactive musical behaviours spanned from Level 2 to Level 5 throughout the reported period, with a frequency shift in which the higher frequency of musical behaviours shifted from Level 2 (in week 2) to Level 5 (in week 29). This demonstrated that Betty was reported to recognise and respond to musical pieces more frequently in the later stage of the reported period. Figure 7.12b shows that Betty's Proactive musical behaviours, which were less frequently rated in general, were mainly at Level 2, showing her sound-making activities. Figure 7.12c demonstrates that Betty's Interactive musical behaviours were consistently at Level 2, with occasional instances being rated at Level 3. The musical instances at Level 3 reflected her ability to copy sounds in a deliberate way in a language learning context, according to the corresponding musical instances from the diary account. In general, Betty's musical behaviours demonstrated a wider range of SoI-EY levels in the Reactive domain, compared with the Proactive and Interactive domains.

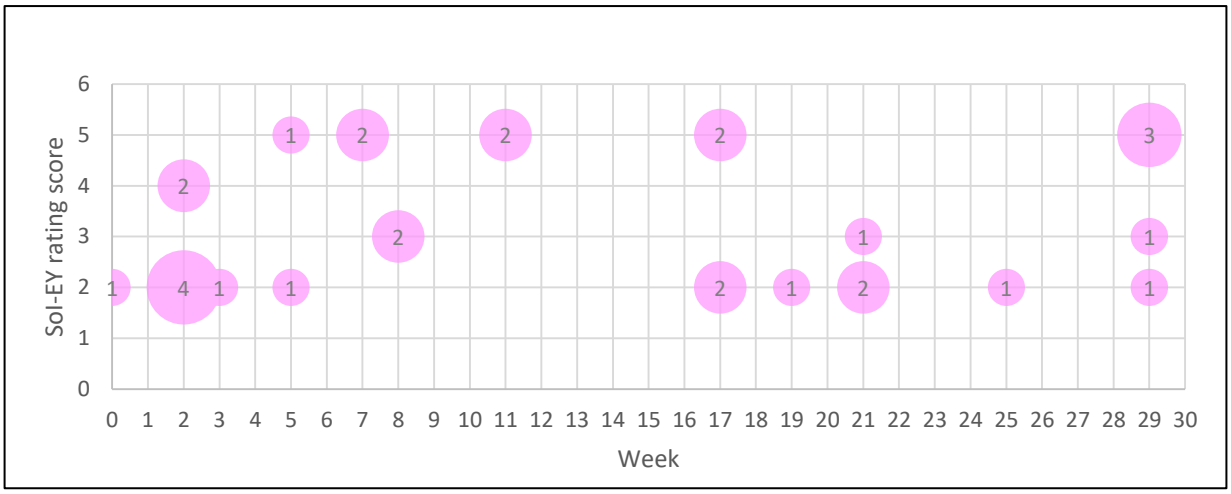

Figure 7.12a: The bubble chart of Betty's musical behaviour in the Reactive domain

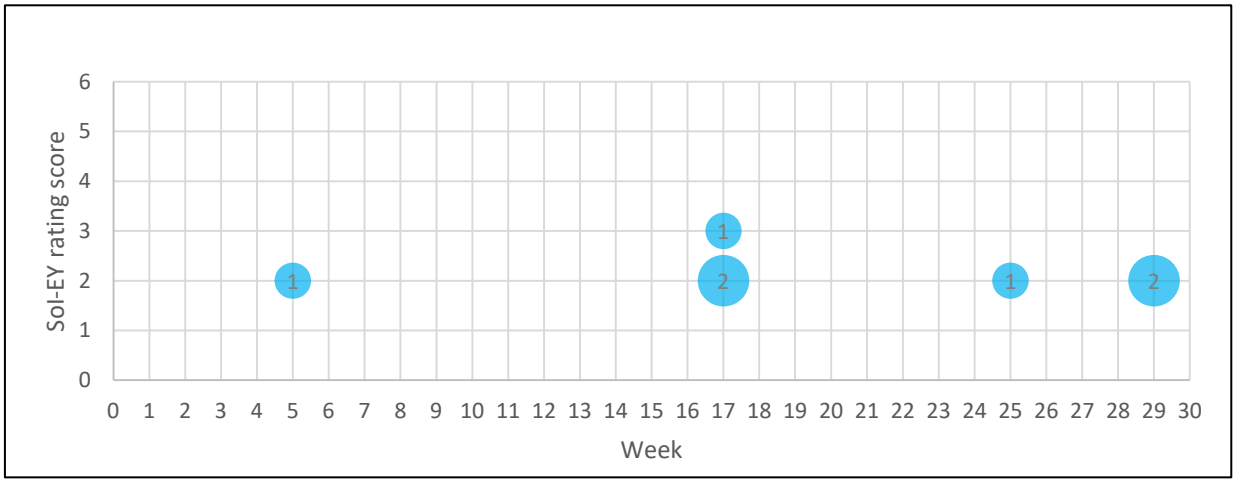

Figure 7.12b: The bubble chart of Betty's musical behaviour in the Proactive domain

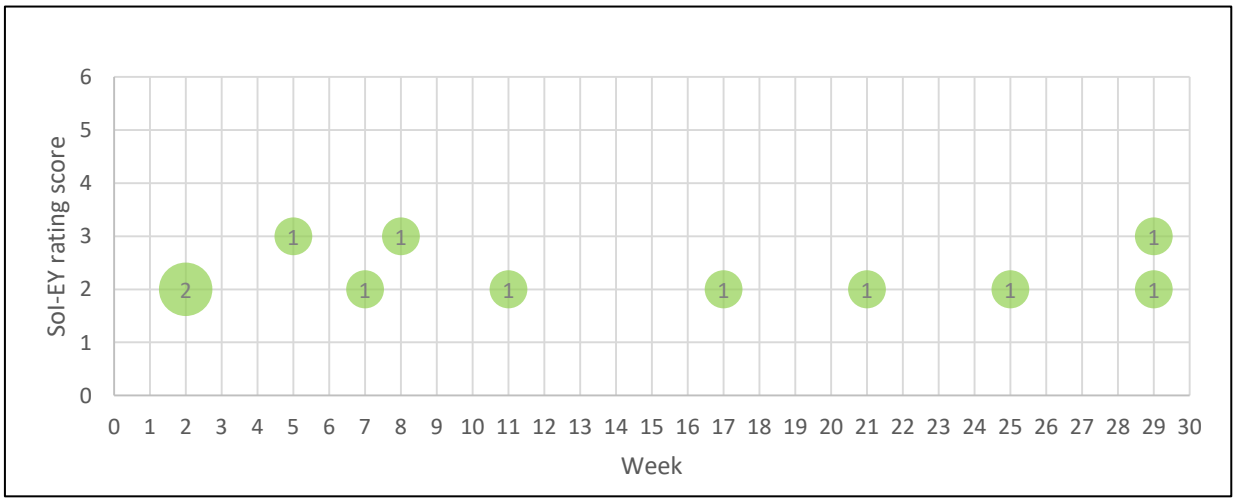

Figure 7.12c: The bubble chart of Betty's musical behaviour in the Interactive domain

7.6.2 The average levels of Betty's musical behaviours over time

Based on the mean score of the weekly SoI-EY level (Table 7.5), Figures 7.13a, 7.13b and 7.13c illustrate the average levels of Betty's musical behaviours for each week over 29 weeks of the reported period. Figure 7.13a shows that, in the Reactive domain, Betty's average SoI-EY level fluctuated between Level 2 and Level 5 throughout the reported period, although there was an increasing feature towards Level 4 in the last data entry week (week 29). Figure 7.13b demonstrates a stable feature of Betty's average SoI-EY level in the Proactive domain at Level 2, with a slight increase in the level in week 17. Figure 7.13c shows that Betty's average SoI-EY level in the Interactive domain fluctuated between Level 2 and Level 3, and stayed at level 2 for most of the reported period, although there was a slight increase in the level in the last data entry week. Overall, Betty's average SoI-EY levels throughout the reported period demonstrated more variance in the Reactive domain, compared with the Proactive domain and Interactive domain. Furthermore, there was an increase of the average levels of Reactive and Interactive domains towards the end of the reported period, demonstrating there were more musical instances of higher levels in these two domains in the later stage of the reported period.

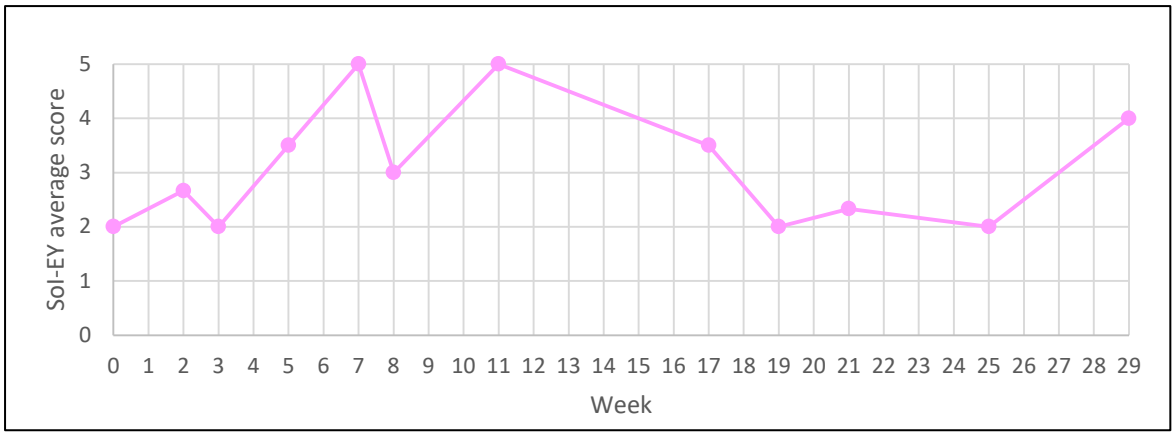

Figure 7.13a: The line chart of Betty's musical development in the Reactive domain over 29 weeks

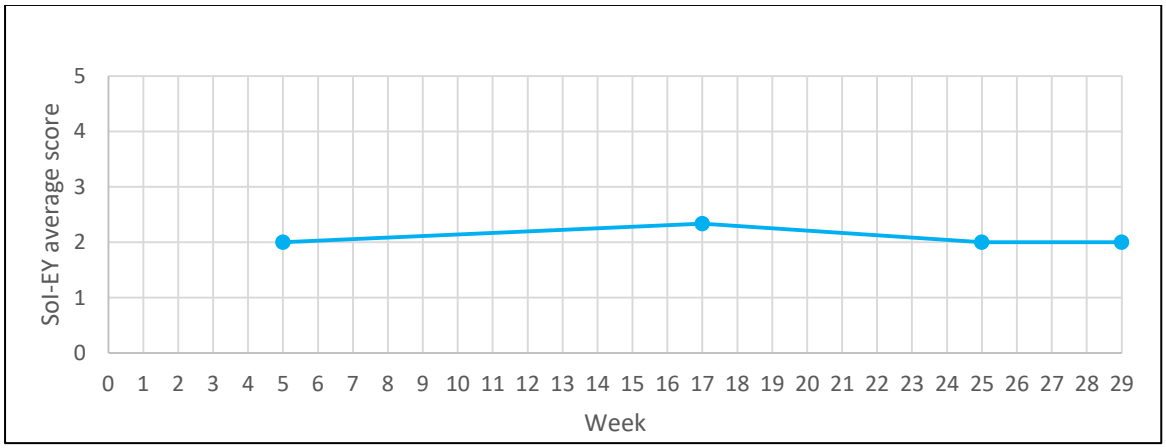

Figure 7.13b: The line chart of Betty's musical development in the Proactive domain over 29 weeks

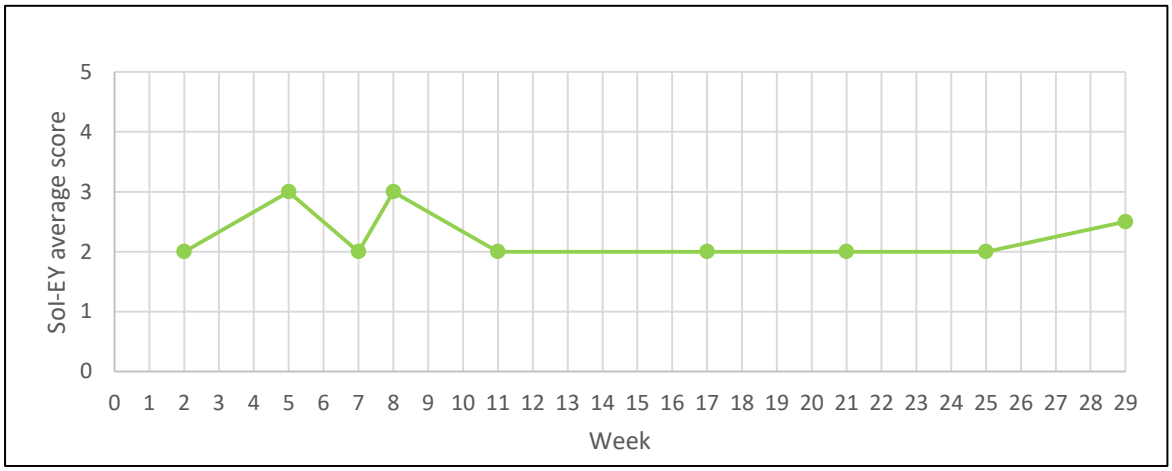

Figure 7.13c: The line chart of Betty's musical development in the Interactive domain over 29 weeks

7.6.3 The correlation analyses of Betty's musical behaviours over time

Based on the weekly mean score that represents the weekly average SoI-EY level (Table 7.5), Figures 7.14a, 7.14b and 7.14c illustrate the trendlines that indicate the general direction of progress of Betty's SoI-EY levels over the reported period. In Figure 7.14a, the trendline line in the Reactive domain demonstrated stability at Level 3 in general (R2=0.0003), although there were data points at various levels that represented a wide range of levels in the reported musical instances in individual weeks throughout the reported period. In Figure 7.14b, the trendline in the Proactive domain presented stability in general (R2=0.0159), located at just over Level 2 throughout the reported period. In Figure 7.14c, the trendline in the Interactive domain demonstrated a slight decrease to Level 2 towards the end of the reported period (R2=0.0464). The decrease of the trendline in the Interactive domain might be due to fewer opportunities for musical interaction being provided to Betty in the later stage of the family's research participation. The correlation analyses between the variable of Betty's SoI-EY average level (mean score) and the variable of time indicated no statistically significant correlations among Reactive (r=0.017, p=0.959, n=12), Proactive (r=-0.126, p=0.874, n=4) and Interactive (r=-0.215, p=0.578, n=9) domains. This might be explained by the variety of the SoI-EY levels being exhibited in Betty's reported and observed musical behaviours throughout 29 weeks of the reported period. It is worth noting that the insufficiency of the information (for example, only four data points of mean score out of 12 data entry weeks in the Proactive domain) might also lead to the bias of the result.

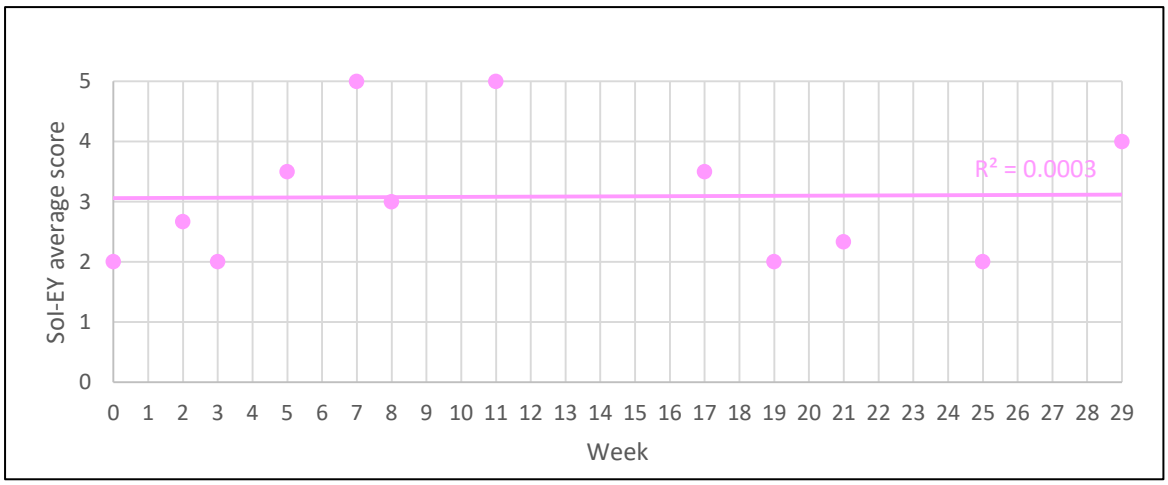

Figure 7.14a: The scatter plot of Betty's musical development in the Reactive domain

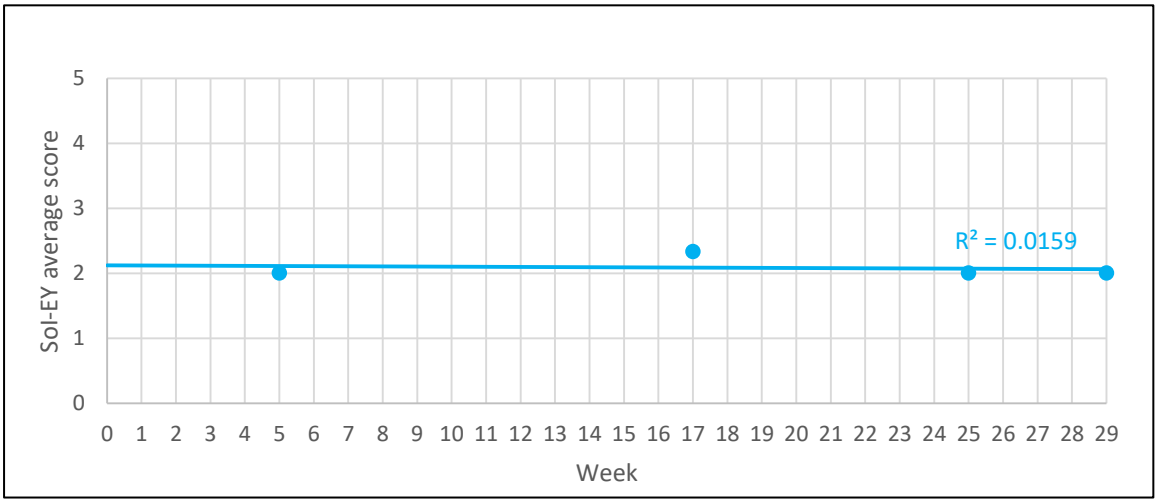

Figure 7.14b: The scatter plot of Betty's musical development in the Proactive domain

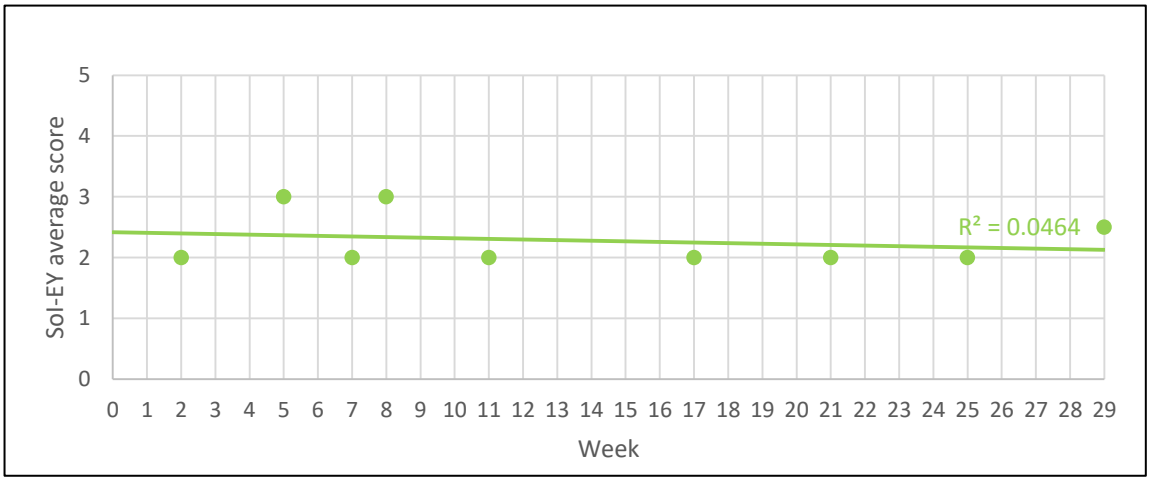

Figure 7.14c: The scatter plot of Betty's musical development in the Interactive domain

7.6.4 Betty's musical development perceived by the mother

In addition to the analyses of Betty's SoI-EY ratings over time, the description by the mother regarding aspects of Betty's musical progress was also analysed through the lens of the SoI-EY framework in order to gain a comprehensive understanding of Betty's musical development.

As perceived by the mother, Betty's musical development was demonstrated when she tended to take the initiative to press the electronic keyboard toy and dance to music rather than 'following her sister'. Her independent exploration of the media and dancing to its music was also shown in a video recording (Betty Video [I3]-1). This demonstrated her Proactive musical behaviour at Level 2, which was likely to be facilitated by her familiarity with music and a desire to dance to music, which featured her Reactive musical ability at Level 5. For instance, in the video recording, Betty demonstrated her recognition of simple musical structure by looking for the button when the music was about to finish.

Furthermore, it was also reported by the mother that, after a few weeks of repetitive exposure to the same Chinese children's songs with emphases on certain words, Betty would learn to say the words by imitation. This phenomenon demonstrated Betty's progression to copy sounds, featuring her Interactive Level 3 musical behaviours, although it occurred in a language-learning context. Overall, from the mother's perspective, Betty's musical development took place particularly in operating the media independently (Proactive), being more enthusiastic to dance to music (Reactive) and the learning of new Chinese words (Interactive), which featured her musical development in all three of the SoI-EY domains.

7.6.5 Summary

This section presented Betty's musical development from different analytical perspectives. Through the examination of Betty's SoI-EY ratings in terms of their frequencies and weekly mean score over 29 weeks, the findings indicated that Betty exhibited more variance of levels in the Reactive domain throughout the reported period, compared with the other two domains in which Betty exhibited lower Levels of 2 and 3. In the Reactive domain, Betty demonstrated her musical abilities ranging from an awareness of sounds to the recognition of simple musical pieces. The trendlines of Betty's average Levels over the reported period showed stability in the Reactive and Proactive domain, and a slight regression in the Interactive domain, possibly due to fewer opportunities for musical interaction being offered to Betty. There was no statistically significant correlation between the variable of the SoI-EY average level and the variable of time in each of the three domains, demonstrating the variance in constancy of Betty's SoI-EY levels, which might not present in a linear

progression. Betty's musical development from the mother's perspective revealed aspects of her musical improvement in all of the three SoI-EY domains, such as operating the media independently, more enthusiasm in dancing to music, and the learning of Chinese words through vocal imitation. Through the lens of the SoI-EY framework, Betty's language development is understood in terms of her musical ability to copy sounds deliberately (Interactive Level 3), which also highlighted the relationship between music and language.

7.7 Analyses of contextual factors of Ellen's and Betty's musical development

This section presents the analyses of Ellen's and Betty's musical environment within the family context that might serve an influential role in shaping her musical development. As they are growing up in the same family together as sisters, the analyses of Ellen's and Betty's musical environment aim to seek influences from the family as a whole as well as unique aspects of their musical environment. Examined through the lens of Ecological Systems Theory (Bronfenbrenner, 1979, 2005), Ellen's and Betty's musical environment is conceptualised into Micro-, Meso-, Exo-, Macro- and Chronosystems, representing different aspects of musical influences, from materials and social interaction within the immediate settings to the remote factors, the cultural impacts, along with the consideration of the passage of time. The following sections present the aspects of each system that might play an influential role in Ellen's and Betty's musical development.

7.7.1 The overview of Ellen's and Betty's musical environment

Figure 7.15 illustrates Ellen's and Betty's musical environment conceptualised into the framework of Microsystem, Mesosystem, Exosystem, Macrosystem and Chronosystem, demonstrating the different aspects of their musical environment in the family context that might play an influential role in shaping their musical development. The Microsystem represents their family home in the UK, in which the following aspects are explored: technology and media that facilitated their musical engagement, the social interaction within the family that stimulated Ellen's and Betty's musical engagement, Ellen's cello practice at home, musical engagement on car journeys, general parenting practice and the parental beliefs concerning Ellen's and Betty's musical learning. The Mesosystem represents the network or places in which Ellen and Betty took part in music on a regular basis and in which they had opportunities for musical engagement. These included the family's social network, childcare provision and music groups in the local community. The Exosystem represents the remote factors such as the musical biographies of the parents, which were not directly

participated in by Ellen and Betty but played an influential role in shaping their daily musical experiences. The Macrosystem represents various musical genres exposed to Ellen and Betty, the influence of Western musical culture, and multiple cultural immersion including UK culture, Chinese culture and the family's culture. The Chronosystem recognised the temporal patterns of Ellen's and Betty's musical environment that might have an impact on their musical development. The following sections will explore the characteristics of each system and how these factors might shape Ellen's and Betty's musical development.

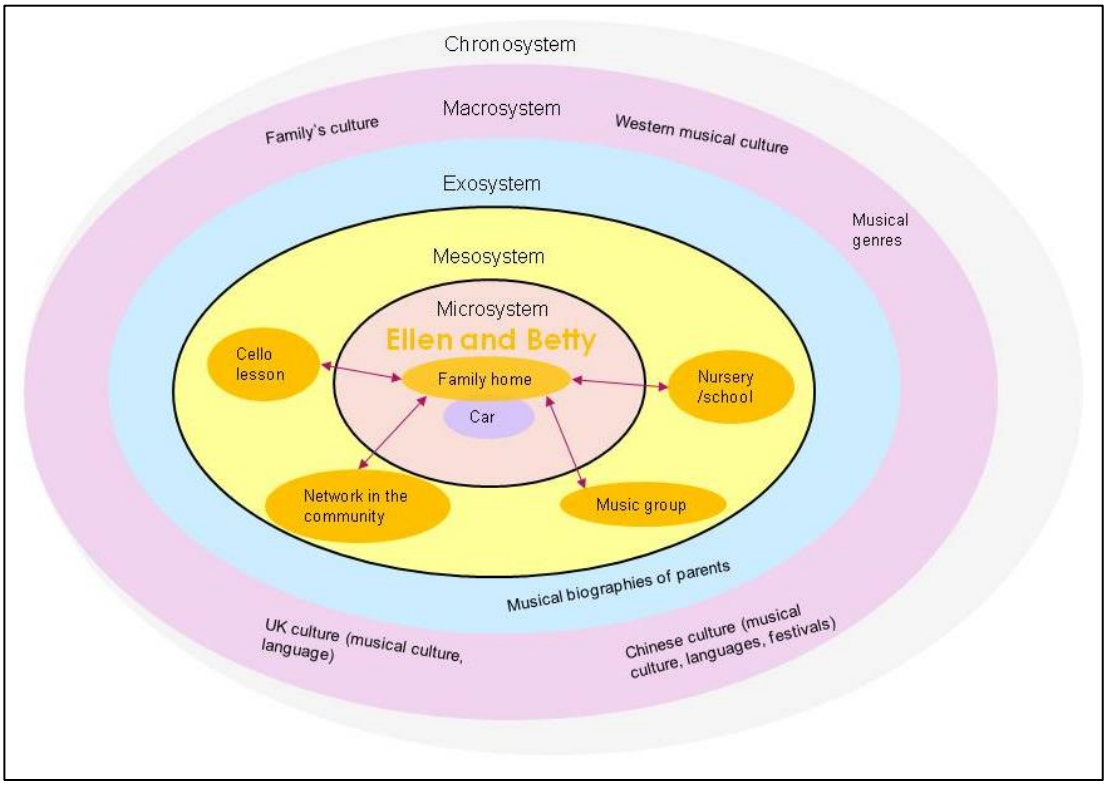

Figure 7.15: Ellen's and Betty's musical environment within the family context through the lens of the Ecological Systems Theory (Bronfenbrenner, 1979; 2005)

7.7.2 Microsystem

The family home was the place where Ellen and Betty gained abundant musical experience. Ellen and Betty experienced music through a range of media as well as through social interaction with family members. Ellen's daily cello practice was another highlight in the family's musical engagement. Ellen's and Betty's musical experiences were extended from the home environment to car journeys, during which they listened to various CDs or radio

stations. Furthermore, Ellen's and Betty's musical experiences within the family were shaped by the general parenting practice and the parental beliefs in the value of their music learning. The following sections present aspects of Ellen's and Betty's musical environment in their family home, which is believed to play a role in shaping their musical development.

7.7.2.1 Technology and Media in the home environment

Ellen's and Betty's musical exposure largely relied on the media available in the home, which was partially facilitated by digital technology, such as an iPad. There was a range of media available in the home environment that stimulated Ellen's and Betty's musical responses and music-making. These included electronic musical toys, CDs, and music-related applications on an iPad. The family also watched British TV and radio broadcasts. Among all the available technology and media at home, an iPad application called 'Frozen Karaoke' seemed to be of constant interest to Ellen in the home environment. There were many reported instances of Ellen playing and singing to the Frozen songs at home throughout the day, sometimes joined by Betty. Given the iPad's portable nature, Ellen also used the application in different places, such as in the car, or during a playdate. The application seemed to be a tool for Ellen to master the songs, as Vicky described Ellen's frustration at not being able to sing the songs well without the application:

> *Once we went out with our friends. Ellen has not listened [to the app] for a while, because the app has been [accidentally] deleted for a long time. Her friend was able to sing the whole song, and Ellen couldn't catch her singing. Therefore, she felt very unhappy. She would say, 'How come she could sing?' She wouldn't say she is unhappy, but I can tell her disappointment on her face, her disappointment with herself. I might need to tell her dad to redownload the app as soon as possible, by the way. (Ellen&Betty Interview [2])*

The instance above demonstrated Ellen's strategies for mastering the songs through repetitive singing along with the application. Ellen's Interactive musical behaviours in the family context seemed to depend largely on media, such as the iPad, and the unavailability of the media might have resulted in fewer opportunities for her Interactive musical behaviours at an advanced level to be evidenced and developed, as shown in Figures 7.10c and 7.11c.

In addition to the iPad app, Ellen and Betty also experienced music through British TV and radio broadcasts, on a frequent basis. It was reported that the family had been watching Strictly Come Dancing 'religiously' when its new season started (Ellen&Betty Diary [6]), and Ellen and Betty would dance and sing along with the dancing performances on the TV, which were normally accompanied by English popular music. Ellen and Betty were also reported to

dance to music on the radio, on which they heard Classical music or popular music. In addition, an electronic keyboard toy seemed to be favoured by Ellen and Betty. Ellen and Betty would press the toy and dance to the music. In particular, Betty's enthusiasm in pressing the buttons and dancing on her own was perceived to be an example of her musical progression by the mother. The audio media available in the home environment included CDs of phonics-related learning songs, which Ellen was reported to play and sing along to. Overall, the engagement with a range of media available at home exposed Ellen and Betty to an extensive range of musical genres, although they both showed musical preferences: while Ellen constantly played and sang along with the Frozen app on iPad, Betty liked dancing to the music played by the electronic keyboard toy. Their musical exposure through media was largely embedded in a social context. For instance, Ellen and Betty might dance to music playing on the TV or the electronic toy together. The musical exposure through media also introduced them to the music of various cultures, including local English culture and Western musical culture.

7.7.2.2 Social interaction within the family home

Social interaction was embedded in various musical activities in the family, such as singing and dancing to music. There were abundant singing activities in the home environment. It was reported that Ellen would sing a variety songs on her own or to Betty, including the Frozen songs, English phonics songs, Chinese children's songs, or her own made-up songs. Betty was reported to be more responsive to Ellen's singing, compared to other types of music. Vicky would sing songs to Ellen as well as Betty, but they were for different reasons. As for singing to Betty, Vicky tended to sing a range of Chinese children's songs to Betty in order to introduce the Chinese language to her. Her singing repertoire included 'Little Donkey', 'Train Runs Fast'[32], 'Head, Shoulders, Knees and Toes', and 'Twinkle Twinkle Little Star', featuring a mixture of traditional Chinese children's songs and the Chinese version of English nursery rhymes. Sometimes Vicky and Ellen would sing these songs to Betty together. Betty was reported to recognise some of the Chinese children's songs by making the hand gestures along with the songs. She also learnt to say several Chinese words through immersion in the Chinese children's songs, as noted by Vicky. As for singing to Ellen, Vicky claimed that she did not sing to Ellen any more, as Ellen was 'too old (Ellen&Betty Interview [1])'. However, when Ellen asked her to demonstrate the song so that she could learn it, Vicky sang to Ellen at first, which then led to a joint singing activity, as reported in one musical instance (Ellen&Betty Interview [2]). Overall, singing activities in Ellen and Betty's family were embedded in abundant social interactions. Both Vicky and Ellen sang to

[32] 'Little Donkey' and 'Trains Run Fast' are respectively called 小毛驢 (xiao mao lu) and 火車快飛 (huo che kuai fei) in Chinese.

Betty, possibly as a result of caregiving to young children, as Vicky was aware of Ellen's older age when it came to singing. Vicky sang to Betty also for the purpose of language learning and sang to Ellen for didactic purposes.

In addition to singing, dancing to music also involved social interactions, especially between Ellen and Betty. Two video recordings demonstrated that Ellen and Betty were dancing to music together. In one video, Ellen was dancing rhythmically to the pop music playing on the TV, and was then joined by Betty (Figure 7.8). Betty span with her body at first but then walked away after falling down on the floor. In the other video, Betty was dancing to the easy-listening digital music playing from electronic keyboard toy, and was then joined by Ellen (Figures 7.7a and 7.7b). In this video, Ellen imitated Betty's dancing style of swinging side to side and they both enjoyed watching each other's dancing at the same time. These social interactions between Ellen and Betty demonstrated one's tendency to join in the other's dancing, which seems to be natural in children. Furthermore, in the second video, Ellen adjusted her dancing style to match Betty's dancing that featured her ability of gross motor skills, which was likely to stimulate Betty's further musical responses, compared with the first video. The parents' positive verbal feedback, which was shown in both videos, also seemed to encourage their musical responses of dancing to music.

Living in the same family, Ellen's preferred musical pieces seemed to contribute to Betty's familiarity with the same pieces. For instance, as Ellen frequently watched and sang along to the Frozen Karaoke application, Betty showed her recognition of the song by vocalising and moving her body when she heard the theme tune. This demonstrated the impact of the older sibling who introduced and enhanced the musical exposure of her younger sibling in the family context.

The whole family was engaged in music together when they watched the TV programme 'Strictly Come Dancing' in the evenings. As reported by the mother, they 'played at being the dancing judges and being the dancers' (Ellen&Betty Diary [6]). Other musical interaction included Vicky's supervision of Ellen's daily cello practice, which is presented in the next section. In general, the social interaction between the family members seemed to play a supportive role in Ellen's and Betty's musical development. There were abundant musical interactions between Ellen and Betty, and they seemed to play a stimulating role for each other in their musical engagement. For Ellen, her singing activities were partially motivated by willingness to sing to Betty. For Betty, Ellen's adjustment of dancing style was likely to stimulate her further musical responses.

7.7.2.3 Ellen's cello practices in the home

Ellen's daily cello practice was a highlight in the family's musical environment. Ellen had been learning the cello for two months when she started to participate in the present study. Ellen practised the cello at home for ten to fifteen minutes every day, usually after coming back from school. She was allowed to do other things of her choice after the cello practice. Throughout the reported period, Vicky uncovered various aspects of Ellen's cello practice at home, such as the strategies for practices, Vicky's perception and Ellen's improvement in playing the cello through daily practice.

Ellen's cello practice was always supervised by Vicky, who made sure that Ellen followed the instructions given by the teacher. The instructions involved, for example, practising the focus piece, completing the number of practice times, and the technical reminders, such as hand positions. Vicky explained that she always followed the instructions given by the teacher because '*I don't know how to play the cello. I don't know what is wrong or right*' (Ellen&Betty Interview [3]). Nevertheless, Vicky sometimes felt unsure of how to practise. The following descriptions provided examples of Ellen's daily cello practice:

> *Last week, the teacher said that you needed to practice each step for ten times, so we put a lot of effort in practising. And then this week, it was [IMITATING THE SOUND] 'ri ri rai rai', and I asked her how many times she would like to practice, she said five, so I let her [practice for] five times. It is no use to force her. Sometimes I don't know how to practise. Practising the songs is harder.* (Ellen&Betty Interview [2])

> *Every time when we have the lesson, the teacher would remind me of this and that, and I would pay more attention to those points […] For example, in this week, the teacher suggested the hand positions. Thus, during the week, I slowly correct her [hand position].* (Ellen&Betty Interview [3]).

Vicky used a range of strategies that encouraged Ellen to carry on with her practice, such as linking the practice with her favourite Frozen songs, role play, negotiating with her and offering rewards. The following description gave examples of various strategies for cello practice:

> *Encourage[d] her to pretend that she's playing the tunes from Frozen when we practi[s]ed 'jumping' on the string with her cello hand. She quite enjoyed that and was willing to practise.* (Ellen&Betty Diary [1])

> *Ellen is tired after a long week of playing. Asked her whether I should cancel her playdate later in the day. She quickly responded no. So I reasoned that she must not be*

too tired to practi[s]e cello. She did practise when I dangle treats of chocolate stars in front of her. (Ellen&Betty Diary [1])

She likes pretending to be the teacher and have instructions on how to hold the bow and play the cello. Though when it came to her turn to become the student, she would whine. She knows that we have cello practice every day. (Ellen&Betty Diary [3])

She gets confused at 'up above the world so high, like a diamond in the sky' - and she will breakdown and say 'I can't do it. I'm not very good at cello.' I normally would encourage her to play and try to ignore her moans. After a few coaxing, she will try again. And when she does a particularly good 'twinkle', she knows she will get a treat - normally 1 smarties (not very generous parents hahahaha) (Ellen&Betty Diary [7])

In particular, Vicky noted Ellen's reaction when being corrected during the cello practice. Ellen was sensitive when being instructed or corrected, which Vicky attributed to Ellen's age:

I think this is the first year in her life that she has to be corrected. Thus, when she is playing the cello, I told her that…you are pretty good, but you probably need to pay attention to these, for a little bit, and she would say, 'mum, you cannot tell me what I did wrong, but you should tell me what I did right', she would say this to me, 'you can't point out the bad things, mummy. It upsets me. You can only point out the good things.' I don't know who said these things to her [LAUGH].' (Ellen&Betty Interview [3]).

In addition to supervision, in one cello piece, Vicky played the piano to accompany Ellen's playing, which formed a duet. Vicky found playing music together more effective and interesting for Ellen than being supervised and corrected:

Accompanying. But it's only one piece of music like this. It's to encourage her. I think the teacher noticed that if she played it by herself, it's a bit boring. Therefore, she said, how about you and she play together. So she found a piece for us. So when she is practising, I also need to look at her. But I feel this is very effective. If there is no music, I might physically put her hands into the right position, which I don't think she likes. If I am playing the piano, I told her to pay attention to something and she did it by herself. She preferred this way. Looking by herself. (Ellen&Betty Interview [3]).

Furthermore, the positive effect of playing with another person was also reported when Ellen practised the cello with a friend:

Ellen also had a cello practice with a friend this weekend. They both did very well and concentrated enough to finish their pieces. (Ellen&Betty Diary [6])

The gradual formation of cello practice as a daily activity and her growing concentration were perceived by Vicky as progression. In the first few diary entries, Ellen was reported as being 'reluctant' and not concentrating during her practice. In the later stage, she became used to the pattern of daily practice:

> *Ellen continues to improve in cello. It's slow but she's getting used to practi[s]ing every day.* (Ellen&Betty Diary [5])

> *'She is gradually [getting] better. Sometimes she is still… I mean to say, after we get pass [her] moaning about having to practice, something like "practice is so exhausting", after we get past that, I see her gradually… [getting better].* (Ellen&Betty Interview [3])

When being asked about what counted as a 'good' cello practice, Vicky explained that it was the extent of cooperation that counted:

> *The kids were more cooperative and less complaining. We still have to use bribes to get them to practice. I wonder when she will start enjoying playing the cello* (Ellen&Betty Diary [6]).

Within the context of the cello practice presented above, Ellen's progress on the cello was perceived in many aspects, such as the progression in the skills from plucking to playing the whole piece, and her progression in enjoyment of the practice, as she was singing along while playing (Section 7.5.4).

When Ellen was playing the cello, Betty was reported to show an interest in joining in. She not only made sounds by plucking the cello, but also learnt the position of playing the cello (see 7.4.4 for an example).

Overall, Ellen's cello practice in the home demonstrated aspects of how Ellen progressed on the cello through daily practice, which also lay in the family's cooperation with the cello teacher who gave instructions for practising. Ellen's cello practice in the home also immersed herself and Betty in Western musical culture.

7.7.2.4 Musical engagement on car journeys

Ellen and Betty experienced music on their car journeys. Vicky reported that a car journey with Ellen and Betty normally took 5 to 15 minutes, travelling between home and school or other classes, such as Ballet and swimming. Vicky said that, when driving, she usually played the Suzuki cello CD in the car, so that Ellen could get familiar with the musical pieces before learning to play them. However, Betty tended to fall asleep when listening to the cello CD. When Vicky did not want her to sleep, she would turn on BBC Two for popular music, which she found was more appealing to Ellen and Betty as both of them would move their

bodies to the music. She further commented that Ellen preferred popular music with resonant and upbeat features and would sing along with the lyrics (R5A&I4B) (Ellen&Betty Interview [2]). It was also reported that Ellen would sing made-up songs when feeling bored along to the cello music. In one musical instance, she was reported to sing an English nursery rhyme and change the lyrics around, which was followed by her made-up songs (P5B,C) (Ellen&Betty Diary [9]). In general, Ellen's and Betty's musical experiences in the car involved music-listening that was linked to Ellen's cello learning, as well as listening to English pop music on the radio, which Vicky perceived stimulated more musical responses from Ellen and Betty. Ellen would also sing the known songs or made-up songs to accompany her on car journeys.

7.7.2.5 Integration of music learning into parenting practice

The parenting practice in Ellen and Betty's family was influenced by the Suzuki method, the musical pedagogy that was applied in Ellen's cello learning. Through watching Ellen's private cello lesson, Vicky recognised that the cello teacher, who carried out the Suzuki method, played an encouraging role in Ellen's cello learning, and this had also given her many ideas when supervising Ellen's cello practice:

> *The Suzuki teacher has a lot of training on how to encourage children like, as young as Ellen, to keep up playing, because children as young as Ellen doesn't understand things like we do […] I think the teacher has given me many ideas in terms of encouraging Ellen to sit still and pay attention.'* (Ellen&Betty Interview [3])

Furthermore, the encouraging aspects of the Suzuki method had been integrated into Vicky's parenting practice. She praised the Suzuki style as a 'transferable skill', as it focused on the 'positive'. She articulated that the Suzuki method appeared to make her a better person and guide her in general parenting:

> *Since I learnt about this method, I have learn how to get on with them, in a good way, rather than saying no, no you can't do it. We will focus on the positive and fail unpositive […] it's a transferable skill.* (Ellen&Betty Interview [2])

> *[The Suzuki method is] very encouraging rather than putting you down. And...I think we need a lot of that, because of our culture, a lot of the time is criticising. Isn't it? 'You are doing poorly', 'this is not tasty', you asked your mum why do you say this, she would say, 'I am just giving you a bit of advice. I want you to improve. That is why I say this.' But there are better ways of saying it to make someone want to improve, aren't there? So I think [going] through all this Suzuki process, it makes me a better person [LAUGH].* (Ellen&Betty Interview [3])

In addition, when being asked about the most important things for Ellen and Betty when they grew up, Vicky emphasised ‘happiness, confidence and independence’. The choice of the Suzuki method, perceived to be an encouraging method in music learning, seemed to reflect her value on general parenting. This was facilitated by the demonstration from the cello teacher and the trusty relationship between the family and the cello teacher.

7.7.2.6 Parental beliefs on Ellen’s and Betty’s music learning

Parental beliefs on music learning, in particular the values held by the mother Vicky, seemed to play a role in shaping Ellen’s and Betty’s daily musical exposure and experiences within the family home. Vicky’s perspectives on Ellen’ and Betty’s music learning had a strong connection to her own experiences of learning the piano in her childhood (see Section 7.7.4). She perceived those music-learning experiences to be beneficial in nurturing her appreciation of Western classical music, which she hoped her daughters would experience as well. However, the negative memory of practising the piano and reading the notation made her believe that the enjoyment of music should come first, which also led her to choose the Suzuki method in Ellen’s cello learning. Explained by Vicky, the Suzuki method focused on learning listening rather than notation reading. Vicky articulated the aspects of her views on Ellen’s and Betty’s music learning:

> *I like the Suzuki Style-Wise because I don’t like to receive the traditional way of teaching, you need to read the notation, I feel it very hard to read the notation while playing. I like her to, let her make sure that she enjoys it, the music. [To] improve her musicality. And then I will hope, I wouldn't say that I want her to be a musician in the end, but I want her to have some sort of appreciation for Classical music, like I have.* (Ellen&Betty Interview [1])

Despite an emphasis on the aesthetic aspect of music, when being asked about the potential benefit to Ellen of learning a musical instrument, Vicky associated instrumental learning with the establishment of discipline:

> *Discipline [LAUGH]. A way of installing discipline. A way of making them understand...sometimes when you learn something, you need to work very hard on practising. It's an additional thing that she wouldn't learn from school. (Ellen&Betty Interview [3])*

In addition to her perspectives on instrumental learning and the positive comment on the Suzuki method, Vicky regarded singing to be ‘the most appealing [activity] for young children’ (Ellen&Betty Interview [1]) and, thus, an effective way for children to learn languages. For

instance, she used to take Ellen to rhyme time in the library, which she believed had a positive effect on Ellen's language development:

> *Therefore, singing is the best [way to learn a language]. Singing is, you know, I sing songs for you. It is also a way of learning language[s]. Because of that, I think her language development is pretty good, pretty good in school, she can sing many songs. When you go to nursery, if you're the one person that can sing better than the other, your confidence is higher. (Ellen&Betty Interview [1])*

With the belief that singing facilitated young children's language learning, Vicky sang Chinese children's songs to Betty in order to introduce Chinese language to her. Vicky described that, when she wanted to emphasise a Chinese word, such as 'dog', she would sing a Chinese children's songs that is associated with the word. She noticed that, Betty learnt to say the word after a few weeks of repetitive exposure (see 7.4.6).

Overall, Vicky's beliefs in music learning and its supporting role in language learning, was embedded in Ellen's and Betty's musical experiences within the family context and might play a role in enhancing their musical development.

7.7.3 Mesosystem

The Mesosystem of Ellen's and Betty's musical environment represented the family's social network in the community and the places in which they gained musical experiences on a regular basis in the local area external to the family home. The family's social network in the community enabled Ellen and Betty to gain musical experiences through a range of playdates and social gatherings in different places. The local settings that provided musical exposure for Ellen and Betty included the childcare provisions that Ellen and Betty attended and local music groups. The characteristics of these settings and their interrelationship with Ellen and Betty's family home were regarded to be influential to their musical development.

Ellen had regular playdates and parties with her friends, either at her friends' places or her home, and on these playdates she was sometimes joined by Vicky and Betty. There were musical activities involved in the playdates. For instance, during a playdate, Ellen was reported to watch and sing to the Frozen application with her friend. On another occasion, Ellen was performing Christmas songs with her school friends (Section 7.4.5), which Vicky recognised as an exclusive singing repertoire that Ellen had when playing with her school friends. In addition, Vicky believed that Ellen was exposed to a wide range of English pop music when attending these playdates and parties, as she was familiar with those songs and would sing along to the radio on car journeys. These playdates also provided opportunities for Vicky, Ellen and Betty to have joint musical activities with their friends. For instance, in

one musical instance reported in the diary, Ellen and her friends were dancing Ballet to Vicky's humming of Waltz, and Betty was trying to join in with the dancing (Ellen&Betty Diary [3]). In general, these social events provided Ellen with opportunities to have musical engagement with a wider range of people and musical activities. Ellen's specific singing repertoire when playing with her school friends reflected a musical culture among them which might be traced back to their musical exposure and experiences at school. Vicky played a supportive role in sending Ellen to these playdates and sometimes joined in their games with Betty.

Both Ellen and Betty had musical experiences in the early years settings that they attended. Reported by Vicky, when Ellen started attending preschool, she was able to sing numerous nursery rhymes that she learnt from the library rhyme time sessions, and the familiarity and fluency in singing was perceived to build up her confidence at school. Furthermore, Ellen started her Reception year during the participation in this study. As described above, Ellen's exposure to music at school was demonstrated when she and her friends were rehearsing a Christmas nativity performance at school, which involved singing and playing in a performance, as reported by the mother. The school introduced music from English culture, such as the festive songs, which seemed to be different from what was offered in Ellen's home environment. As for Betty, she attended a daycare centre after Vicky returned to work from her maternity leave. Vicky brought a CD of Chinese children's songs to the daycare centre and asked them to play the CD to Betty. Vicky was told by the nursery teacher that the songs had a calming effect on Betty when she was upset (R5A). This might be due to Betty's familiarity with the Chinese children's songs that she might have heard from Vicky's singing at home. In general, Ellen's and Betty's musical experiences in the early years settings demonstrated continuity in terms of the listening and singing repertoire in other informal settings within the family context. Furthermore, this continuity might have been created by Ellen, when she carried the learnt songs from one setting to another, as shown in the musical instance above. The sharing repertoire and listening experiences across formal and informal contexts might enhance Ellen's and Betty's familiarity with music, which plays a supporting role in their musical development, as well as social and emotional development.

Ellen and Betty had attended music groups or music-related classes in the local area. Both of them attended a Chinese music group that was held weekly in a local library. The Chinese music group was set up by a Taiwanese mum who was trained as a piano teacher in the Suzuki system. Vicky explained that she sent her children to the Chinese music group for the purpose of learning Mandarin, as she believed singing is the most appealing activity for young children, thus, an effective way to introduce a language (Section 7.7.2.5). In a 45-

minute session, the teacher led a group of children and mothers in singing Chinese children's songs and following musical activities. When attending the Chinese music group, Ellen was reported to be interested in singing the Chinese children's songs that she had previously learnt (I5A). Betty was reported to 'blossom with attention' in the Chinese music group and jiggled around when hearing music with a heavy beat (R2A). In addition to the Chinese music group, Ellen also attended a Ballet class, which Vicky emphasised was not initially in her plan but following Ellen's interest and willingness (Section 7.2). In the Ballet class, there was a teacher teaching Ballet and the other 'teacher' (as called by Vicky) playing the piano to accompany their Ballet dancing. Ellen's Ballet dancing was recorded in a video clip, in which she and other girls followed the teacher's instructions to dance to the musical features and do the Ballet gestures (Ellen Video [I3]-4) (R5B,D). In general, the local music groups, including the Ballet class for Ellen and the Chinese music group for Ellen and Betty, provided musical activities for Ellen and Betty of a more structured and adult-led nature. Furthermore, these musical provisions introduced Ellen and Betty to music of specific cultures through exposure to different musical genres and cultural expressions, such as Chinese children's songs from Chinese culture and Ballet from Western musical culture.

Ellen started attending a weekly private cello lesson when she just turned 4. The arrangement of instrumental lessons was based largely on Vicky's beliefs in music learning and her musical experiences in her childhood (Section 7.7.2.5). During the cello lesson, Ellen played the focus pieces assigned by the teacher. The teacher, a British lady, gave instructions in playing the cello, such as the hand position, which Ellen and Vicky needed to pay attention in their cello practice at home (Section 7.7.2.3). Vicky particularly admired how the cello teacher implemented the Suzuki method by focusing on the positive part of Ellen's playing, which Vicky integrated into her general parenting practice (Section 7.7.2.4). The following description gives an example of the teacher's teaching strategy during the cello lesson:

> *What the teacher does is…sometimes you are not playing well, but the teacher did not focus on that. The teacher would say, your plucking is pretty good. In the next practice, [the teacher would say], 'can you just make sure you tip tall for a bit", instead of saying "ah, why is your hand [positioning] so flat like this? Can you make it pointy now?" You know, aren't we Asian people like this, beating [students if they don't play well]. This [teacher] is not like that. She would say, "you play it very well, but just pay a bit more attention next time." This is the difference.* (Ellen&Betty Interview [2])

Through the weekly cello lessons, Ellen had progressed from plucking (P3B) to playing simple musical pieces using the bow (P5D), as reported by the mother (Section 7.5.4). She

also had learnt to read simple notes and clap the rhythms. Moreover, as arranged by the cello teacher, Ellen had an opportunity to take part in a group concert held by the Suzuki Institute, and they had practised the songs for the concert, such as Twinkle Twinkle Little Star and Rigadoo. Ellen was reported to play the songs in the concert (R5B,I5B) as well as enjoy the practice prior to the concert. Betty was also brought to the cello lesson along with Ellen. The immersion in a cello-playing environment seemed to nurture her interest in the cello. For instance, after being invited by the cello teacher to sit on the cello stool, Betty '*immediately went to her and sat down on the stool all ready to play the cello'* (Ellen&Betty Diary [8]). Overall, the weekly cello lesson enabled Ellen to play simple musical pieces on a musical instrument, as well as nurturing Betty's interest in cello music and a positive music-learning environment. Ellen's cello learning was also largely facilitated by the cooperation of the family through daily cello practice supervised by Vicky.

Overall, the Mesosystem of Ellen's and Betty's musical environment demonstrated the variety of musical exposure in terms of the musical genres and social contexts. Similar repertoire across different contexts was likely to enhance their familiarity with music and facilitate their musical development. The positive relationship between the family and these settings, such as the cooperative nature between the family and the cello teacher, seemed to play a supportive role in nurturing their musical experiences and development.

7.7.4 Exosystem

The Exosystem of Ellen's and Betty's musical environment represented the remote factors that were not directly participated in by Ellen and Betty, but were regarded to be influential in shaping their daily musical experiences and musical development. The musical biographies of the parents, in particular the mother's previous musical experiences in her childhood, seemed to have an impact on her musical expectations of Ellen and Betty. Vicky had learnt the piano when she was eight years old, which was a decision made by her parents. She associated her music-learning decision with the Asian culture of obeying the decisions of the parents (Section 7.7.5). Vicky expressed her frustration when learning the piano, but also affirmed the appreciation of Western classical music that she gained from learning music, which she also wanted her two daughters to have:

> *I told my mum that don't waste the money, I felt…I think I am not very creative, I think I'm very logical. The way I learnt piano was memorising where each position is, rather than enjoying the music.* (Ellen&Betty Interview [1])

> *I am privileged, I am privileged to learn piano. I mean to say it made me appreciate Classical music, making me appreciate uh you know, arts and drama, even though I*

don't perform it myself but I would appreciate someone's performance and because I've been to it, I like my children to have that experience as well. (Ellen&Betty Interview [1])

Vicky's previous music learning experiences seemed to shape her expectations of the music learning of her children. She hoped her children would be able to appreciate music through music learning, as she did. However, the negative experiences of the strict lessons, notation reading and the dull practice, seemed to lead Vicky to choose the Suzuki method for Ellen, which she believed emphasised the gaining of musical appreciation through listening and focused on the positive sides of the children's musical achievement. Overall, the current musical provision for Ellen and Betty, including the cello lessons and the choice of the Suzuki method, was linked to the mother's previous music-learning experiences as part of her musical biography.

7.7.5 Macrosystem

The Macrosystem represents the cultural impacts that were embedded in the mechanism of Ellen's and Betty's Micro-, Meso-, and Exosystems. These included the diverse musical genres that Ellen and Betty were exposed to, which implied multiple musical cultures, the influences from UK culture and Chinese culture, and the family's culture that represented the uniqueness of Rina's family in musical aspects. Western musical culture were recognised to be embedded in many musical genres experience by Ellen and Betty.

Across the musical instances reported by the mother, as well as demonstrated in the video recordings, Ellen and Betty were exposed to extensive musical genres. These musical genres included:

- English nursery rhymes;
- cello music from the Suzuki music-pedagogical system;
- English popular music;
- Disney music;
- English phonic-based songs;
- Chinese children's songs;
- Ballet music (Ellen); and
- Christmas songs (Ellen).

The musical genres above reflected the cultural influences of English and Chinese contexts within Ellen and Betty's family. The exposure to music of English culture, such as English nursery rhymes, English popular music, and Christmas songs, reflected Ellen's and Betty's enculturation into local musical culture through the family's participation in a range of

early years provision and social network in the community and the family's consumption of British TV and radio broadcasts. In addition, the mother's cultural background and identity as Chinese further provided musical input from a Chinese context, such as Chinese children's songs, through singing activities in the family as well as in the local Chinese music group, and this was also supported by listening to CDs. It is worth noting that the introduction of Chinese children's songs was mainly for the purpose of language exposure, which was regarded by the mother as a way to retain the Chinese identity:

> *75 percent of population in Kuching is overseas Chinese. Overseas Chinese [in Kuching] are divided into two groups: one group is Western- educated who cannot speak Chinese, and the other group keeps Chinese tradition and speaks Chinese. Western-educated Chinese are better at makeups. Anyway, we feel ourselves simpler. We think that you are failed if you don't speak Chinese. I would think my daughters as failed if they don't speak Chinese […] It feels like the root is lost.* (Ellen&Betty Interview [1])

The Chinese culture was not only influenced by language learning through music, a Chinese concept of parenting also seemed to effect Vicky's musical expectation of Ellen and Betty. For instance, Vicky associated her own music learning experience in childhood with an Asian culture:

> *There was nothing we ourselves wanted to learn. People like us who grew up in Asian… there was nothing we did that was based on our own decision. (Ellen&Betty Interview [1]).*

Despite the unwillingness of musical learning in her childhood memory, when it came to the musical expectation of her daughters, she arranged instrumental lessons for Ellen in order to nurture her musical appreciation, just as she had gained from her musical background. For Ellen, she was given the choice of selecting the musical instrument to learn, rather than deciding whether to take instrumental lessons or not:

> *Sometimes I asked her, do you want flute or cello? She said cello is ok because she can sit while playing. Ok fine. Maybe that is her choice. That is way she chose of it. Limitation of choice [LAUGH]. (Ellen&Betty Interview [1])*

In addition, the mother's cultural background, being Chinese, also affected the family's participation in the Chinese social network in the local community. It was partially established by the group of parents who attend the Chinese music group. These Chinese families in the local community held playdates for children so that they could be immersed in a Chinese-speaking environment, as well as providing more opportunities for musical interactions in a Chinese context. The participation in English and Chinese cultures also

implied immersion in a bilingual language environment for Ellen and Betty, which might shape their sonic environment and vocalisation through its musical aspects.

In addition to the exposure to musical genres of English and Chinese cultures, Ellen's and Betty's musical experiences were also shaped by their family's culture, which was embedded in a Western musical culture in general. For example, the influence of the family's culture included their exposure to Suzuki cello music, which was favoured by the mother. Ellen's musical preference for Disney Frozen songs was also part of Western musical culture prevalent in young children in particular. Overall, the Macrosystem of Ellen's and Betty's musical environment comprised various cultural influences of local English culture, Chinese culture, the family's culture and Western musical culture. These cultures not only shaped Ellen's and Betty's exposure to different musical genres, but the cultural concept of parenting, especially the impact of Chinese culture, was embedded in the family's musical parenting practice.

7.7.6 Chronosystem

The Chronosystem of Ellen's and Betty's musical environment considered the temporal patterns and events during their research participation that might play an influential role on Ellen's and Betty's musical development. One example of the temporal pattern which occurred during the family's participation in this study was the gradual formation of Ellen's daily cello practice in the home. It was noted by the mother that throughout the reported period, Ellen gradually became used to the daily practice, which she perceived to be progression in Ellen's cello learning as a whole (Section 7.7.2.3). Furthermore, a temporal event that was perceived to have an impact on Ellen's singing ability was the unavailability of the Frozen application on the iPad. As reported by Vicky, after the application was deleted on the iPad, Ellen had fewer opportunities to practice her singing with the application, which enabled her to sing the Frozen songs in its full version, than she used to do. As for Betty, the temporal patterns involved her repetitive exposure to Chinese children's songs. With Vicky's frequent singing and emphases on certain words, she had learnt to imitate certain words and recognised the songs by doing corresponding hand gestures. Her frequent exposure to Ellen's favourite Frozen songs also had contributed to her familiarity with the songs, as she vocalised and moved her body when hearing the theme tunes (R4A) (Section 7.7.2.2). These factors that involved temporal factors might be influential in Ellen's and Betty's musical development. Another feature of the chronosystem was the annual visits to other parts of the world to visit family members and to holiday together, bringing the children into contact with a wide diversity of musical cultures.

7.7.7 Summary

Through the lens of the Ecological Systems Theory, the contextual factors that might play an influential role in shaping Ellen's and Betty's musical development were conceptualised into Micro-, Meso-, Exo- , Macro- and Chronosystems. The potential influences on Ellen's and Betty's musical development within the family context were presented. The Microsystem presented their daily musical activities in the home environment, with the highlights of musical interaction between Ellen and Betty, Ellen's daily cello practice and the mother's perspectives and beliefs in parenting and music learning. The Mesosystem demonstrated a wide range of musical exposure in their local communities, including social networking that encouraged musical engagement and a more structured context such as music groups and Ballet classes. The Exosystem presented the remote factor of the mother's musical background that had an impact on Ellen's and Betty's daily musical experiences. The Macrosytem presented the impacts of multiple cultures that represented the influences from UK and Chinese contexts as well as the unique musical culture within Ellen's and Betty's family. The Chronosystem considered temporal patterns such as Ellen's daily cello practice and Betty's repetitive exposure to a song repertoire that might be influential in facilitating their music learning. These interrelated aspects were considered to shape Ellen's and Betty's musical development.

7.8 Summary of the chapter

This chapter presented the third and fourth case study analyses, focused on Ellen's and Betty's musical development and how the family context might shape this musical development. Examined through the SoI-EY framework, Ellen's and Betty's musical behaviours were understood in various patterns defined by domain (Reactive, Proactive, and Interactive), level (Levels 2, 3, 4 and 5), and four elements (A, B, C, and D) within each matrix of domain and level. Within individual musical instances, there were various patterns featuring single as well as multiple SoI-EY levels and/or domains.

In general, Ellen's musical behaviours were concentrated at the framework's more advanced levels. The analyses of Ellen's average SoI-EY levels over time demonstrated stability at advanced levels in the Reactive domain, a shift toward higher levels in the Proactive domains, and slight decrease in the Interactive domain. This reflected Ellen's musical development in playing musical pieces on the cello, and fewer opportunities provided for musical interaction in the later stage of the reported period. The correlation analyses showed no statistically significant correlation between the variable of SoI-EY

average levels in all of the three domains and the variable of time, reflecting the variance of levels throughout the reported period which was not necessarily a linear progression. The analyses of Ellen's musical development from the mother's point of view featured different perspectives on musical development, in which the formation of daily practice and the enjoyment of music through singing along while playing the cello were highlighted.

Betty's musical behaviours were mainly rated at lower levels, although the wider range of levels were shown exclusively in the Reactive domain, demonstrating her musical ability to recognise and respond to musical pieces before being able to perform them. The analyses of Betty's average SoI-EY levels over time demonstrated stability in the trendlines of all of the three domains, with the overall level higher in the Reactive domain than in the Proactive and Interactive domains. The correlation analyses showed no statistically significant correlation between the variable of SoI-EY average levels in all of the three domains and the variable of time, reflecting the variance or constancy of levels throughout the reported period which did not necessarily increase over time in a linear progression. Betty's musical development from the mother's point of view revealed Betty's increased proactivity in operating the various media and enthusiasm for dancing. Her report of Betty's progression in speaking Chinese words through exposure to Chinese children's songs also raised the connection of music and language.

The contextual factors of Ellen's and Betty's musical development, which was conceptualised into Micro-, Meso-, Exo-, Macro- and Chrosystems, revealed that Ellen's and Betty's musical development was shaped by complex but interrelated factors within their family context. These included the availability of media and social interactions within the family home, a range of musical provisions and musical experiences on car journeys, and the parental beliefs regarding music learning (Microsystem), the family's participation in the social network and attendance in local settings such as early years settings, music groups and Ballet classes (Mesosystem), and the musical background of the mother (Exosystem). These factors that contributed to a wide range of musical exposure were embedded in the multiple cultures experienced and participated in by Ellen and Betty's family, including English culture, Chinese culture, the family's culture and Western musical culture (Macrosystem). Temporal patterns such as daily instrumental practice and repetitive musical exposure were also considered to be influential factors (Chronosystem). These contextual factors, which characterised Ellen and Betty's family as part of Chinese diaspora in London, were considered to play an influential role in shaping their musical development.

Chapter 8: Discussion

8.1 Introduction

This chapter presents a discussion of the findings from the four case studies and how the findings might be related to data from the other participants in this study and to current literature on the musical development of young children.

The chapter is organised into the following sections: Section 8.2 presents a discussion of the musical development of young children through the lens of the SoI-EY framework. This begins with a summary of the findings from the four cases, addressing the similarities and differences in their music-developmental pathways and aspects of their musical development, based on the analyses of their SoI-EY ratings over time, as well as the perceptions of their mothers. Longitudinal data of young children's SoI-EY levels of musical behaviours among the other participant families is also presented as a contextual commentary on the case study detail. This is followed by a general discussion, in which the findings are compared with the literature reviewed earlier in the thesis. Section 8.3 presents a discussion of the socio-cultural musical environment of young children that might play an influential role in shaping their musical development. This begins with a summary of the four case studies, and also draws on findings from the other participants in this study. This is followed by a general discussion, in which the findings are compared with current literature on the musical environment of young children within a family context and its relationship with their musical development. Section 8.4 presents a discussion on how the families as part of Chinese diaspora in London might shape the musical development of young children. The chapter is summarised in Section 8.5.

8.2 Musical development of young children

This section presents the summary of the four case studies, in which commonalities and differences across four cases are illustrated. Furthermore, with a recognition of two age groups in the first and third cases (both starting their research participation from 4Y3M) and the second and fourth cases (both starting their research participation from 10M), a discussion drawing on two different age phases is also presented. The findings are grounded in the related data from the other participant families and current literature.

8.2.1 The music-developmental pathways of young children

Figure 8.1 presents an overview of the music-developmental pathways of four case studies, in which their musical behaviours as reported by the mother and supplemented by video recordings over 6 months were mapped onto the SoI-EY framework. According to Figure 8.1, the music-developmental pathway of each case study child, which was illustrated in four individual sets of concentric circles in the framework, demonstrated unique patterns in their musical behaviours conceptualised into SoI-EY domains, levels and elements. Nevertheless, there are also similar aspects across the four case studies in terms of the distribution and patterns of the musical behaviours. For example, all four cases were perceived to exhibit musical behaviours in all of the three domains (Reactive, Proactive, and Interactive), although the distribution in terms of the SoI-EY levels differed from one case to another. For Lucy and Ellen, their SoI-EY ratings spanned all levels, with more concentrations at Level 5 in all of the three domains, demonstrating their understanding of musical pieces with respect to structures, overall features and music's social and/or cultural meanings, as well as their ability to sing and/or make up musical pieces on their own or with others. There is an exception in the data clusters at Level 3 in Ellen's Proactive musical behaviours that reflected her technical practices in learning the cello, which involved much repetitive sound-making. In contrast, for the younger children, Rina and Betty, their musical behaviours were more concentrated on lower levels in the Proactive and Interactive domains. However, in the Reactive domain, they demonstrated an awareness of sounds (Level 2), as well as a recognition of musical pieces and musical preferences (Level 5), showing a wider range of their musical abilities, including the capability of recognising musical pieces before being able to perform them.

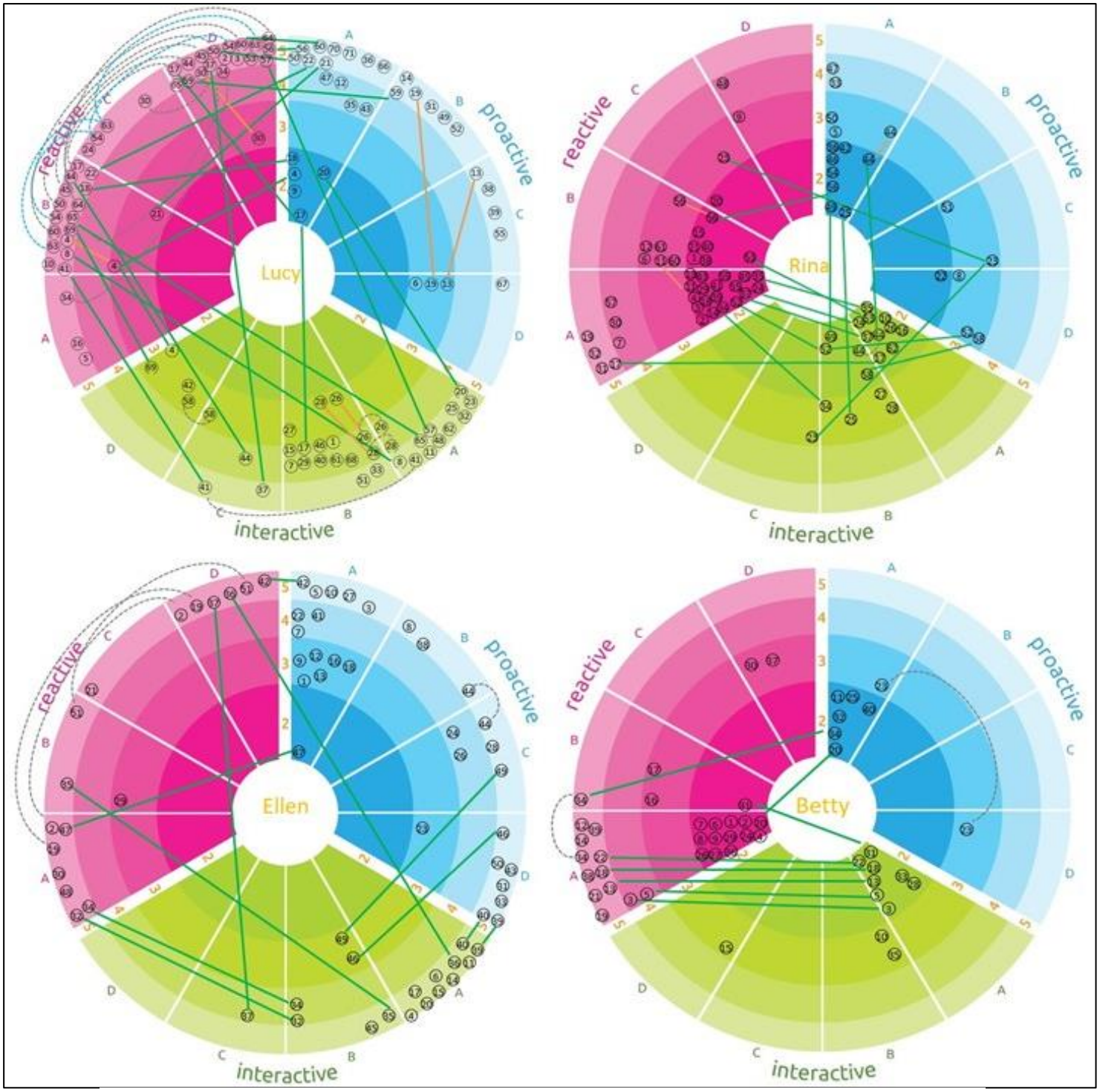

Figure 8.1: An overview of the music-developmental pathways of four case studies

In terms of the various forms of the musical behaviours shown in Figure 8.1, all four cases demonstrated musical instances that involved multiple domains of musical behaviours, which are linked with green lines. For Lucy and Ellen, the musical instances in which they exhibited both Reactive and Interactive musical behaviours represented their musical understanding in terms of structure and/or social and cultural meaning during group singing

or music-making activities. For Rina and Betty, there were also patterns of musical instances in which they were engaged in Reactive and Interactive musical behaviours at the same time. For Rina, the pattern of R2A+I2A represented her bodily movement or facial expressions while interacting with others through vocalisation or sound-making. For Betty, the pattern of R5A+I2A demonstrated her vocalisation in response to her familiar musical pieces. In addition to the musical instances of multiple domains, Lucy and Rina also exhibited musical behaviours at multiple levels within the same domain, which are linked with orange lines in the figure. For instance, Lucy's Proactive musical behaviours at Levels 3 and 5 represented her combination of meaningful sounds, such as animal sounds, with her singing performances. In addition, the musical instances that involved multiple elements within the same matrix of domain and level were reported/observed in all of the case studies, featured as grey dashed curves. Overall, Figure 8.1 shows that there are similar as well as diverse patterns of musical behaviours among the four cases. Additionally, there were distinctive features that seemed to typify age and maturation difference between the older children (Lucy and Ellen) and the younger children (Rina and Betty) (see below).

8.2.2 Young children's musical development in the Reactive domain

Figure 8.2a demonstrates an overview of musical development in the Reactive domain across four cases, based on three different analytical perspectives – frequencies of musical behaviours over time (bubble chart), average levels of musical behaviours over time (line chart), and correlation analyses between SoI-EY levels and time (scatter plots). Figure 8.2a shows similar patterns among the same age group. For Lucy and Ellen, their Reactive musical behaviours generally remained stable at Level 5 throughout the reported period, showing their constancy of musical abilities in responding to features of musical pieces and understanding social and cultural meanings of musical pieces. The stability at the highest level throughout the reported period also indicated a potential ceiling effect, in which Lucy and Ellen might have demonstrated musical behaviours beyond the given levels in the framework. For Rina and Betty, their Reactive musical behaviours demonstrated a wider range of levels throughout the reported period, which could be seen in their bubble charts and line charts. This result indicated their demonstration of musical ability not only in an awareness of music, but also in recognition of musical pieces. This phenomenon led to their overall trendlines of musical development being stable, approximately at Level 3. Figure 8.2b illustrates the longitudinal data of Reactive musical behaviours emerged from the other 7 young children who took part in the longitudinal stage of this study. Figure 8.2b showed a similar feature as Figure8.2a, with children as young as 14 months showing a wider range of musical behaviours in terms of the SoI-EY level, while young children from three year olds upwards generally showed advanced musical behaviours in the Reactive domain.

Figure 8.2a An overview of musical development in the Reactive domain across four cases

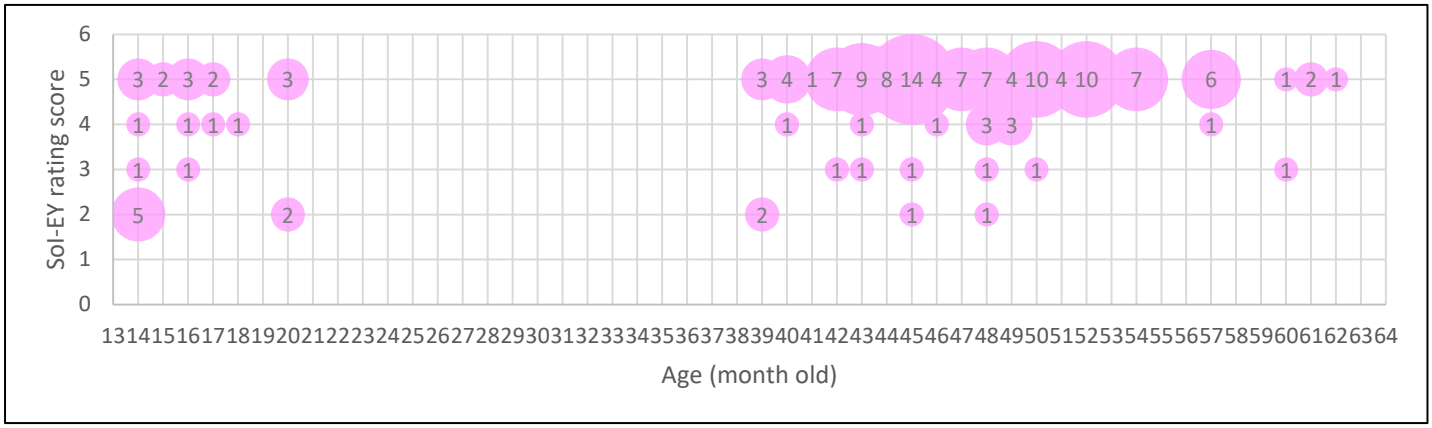

Figure 8.2b Longitudinal data of Reactive musical behaviours from the other 7 participant young children

With regards to research literature, infants as young as five months old have been reported as demonstrating a familiarity with short musical fragments to which they were frequently exposed (Chang & Trehub, 1977a). Young infants even showed subsequent recognition, by their motor responses, of musical pieces exposed to them in their prenatal period (Wilkin, 1995). These examples in current literature implied Level 5 Reactive musical abilities in these infants, although they may not yet have been able to make synchronised movement to musical beats. The children reported in the literature demonstrated responses to music through bodily movements and facial expressions, which represented their awareness of a variety in sounds (Level 2). Tafuri (2008) offered two different perspectives to address young children's responses to music: perceptual and productive. For example, young infants might show familiarity with musical pieces by heart-beat habituation or motor responses (e.g. Chang & Trehub, 1977a), although they are not yet able to grasp the pulsations of music and to accompany these on an instrument until the age of four to five. However, both perceptual and productive abilities of young children could be evidenced in observable behaviours. For instance, as reported by the mother, Betty vocalised 'ah~~~' specifically when hearing Frozen tunes, demonstrating her recognition of this particular song. Therefore, the advanced levels of Reactive musical behaviours evidenced in Rina's and Betty's cases, as well as other young children participating in the research (Figure 8.2b), probably reflects their perceptual ability in recognising musical pieces.

In addition, young children's advanced level of Reactive musical behaviours might imply that their musical preferences are based on the specific musical features and familiarity with the music. A number of participant mothers reported that their children were in favour of music with strong tempi or uplifting features (e.g. Rina, Ellen, Betty, Nos. 3, 7, 12, and 18), as they noticed more bodily movements being stimulated by such musical features. Some mothers made references to uplifting English or Chinese popular songs that their children heard on the car radio or on CDs. This is in accordance with Tafuri's (2008) findings that

young children's bodily movements were encouraged by music with a clear rhythmic structure. Research into young children's musical preferences also reports on specific acoustic features favoured by children, such as those indicated in biased preferences on ID speech (e.g. Fernald, 1985) and ID singing (Trainor, 1996). Findings from the current doctoral study revealed musical preferences as determined by the level of children's bodily movements in response to music, as defined by the participant mothers. Findings also reflected a wide range of musical exposure for young children of the Chinese diaspora in London, including English and Chinese popular music that they had experienced on the radio or other media. Young children's musical preferences might also be based on their familiarity with particular music. For instance, it was reported by the mother that Rina's favourite songs had been 'Brave' and 'Five Hundred Miles'. In general, the research findings suggested that, in the Reactive domain, young children might exhibit an advanced SoI-EY level from an early age.

Participant children of a similar age to Lucy and Ellen demonstrated an understanding of social and cultural meanings associated with musical pieces. This could be seen in the musical instances such as performing musicals (Lucy), or the Christmas nativity (Lucy and Ellen), Ballet lessons (Ellen and No.10), as well as their singing performances that were imitations of characters from Disney films (Lucy and Ellen). Campbell (2011) wrote that, through the enculturation that takes place initially in the family and extends into the community and schools, young children gradually learned the cultural expressions of music. For older children such as Lucy and Ellen, their musical expressions were shaped by the multiple cultures that surrounded them, such as English culture and Western culture.

8.2.3 Young children's musical development in the Proactive domain

Figure 8.3a demonstrates an overview of musical development in the Proactive domain across the four cases, based on three different analytical perspectives – frequencies of musical behaviours over time (bubble chart), average levels of musical behaviours over time (line chart), and correlation analyses between SoI-EY levels and time (scatter plots). Figure 8.3a illustrates similarities, as well as differences, among the four cases. For Lucy and Ellen, there was generally a gradual shift towards more advanced levels of musical behaviours over time in the Proactive domain, which could be seen in the trendline of their scatter plots respectively. Both Lucy and Ellen exhibited a wide range of SoI-EY levels in the early stage of the reported period. As both of them had been reported to be able to sing whole songs since the early fieldwork stage, relatively lower levels of sound-making behaviours implied a variety of music-making activities, despite their ability to sing a whole songs (Level 5). With respect to Lucy, this reflected more instances of operating the sound media (Level 2) with a

desire to dance to music (Reactive), and more fluency and confidence in singing songs at the later stage of data collection, as reported by the mother Clare. She noted that Lucy had made considerable improvement in singing English nursery rhymes which related to her increased proficiency in English. In particular, in Lucy's case, there was a statistically-significant correlation between the variable of the average SoI-EY levels and the variable of time, demonstrating that Lucy's SoI-EY level of Proactive musical behaviours shifted from lower to higher levels over the passage of time. With respect to Ellen, the lower levels at an early stage reflected time spent on her technique practices on her cello, which required making patterned sounds. At the later stage, she was able to play the whole piece of 'Twinkle Twinkle' on the cello, which was part of the observed stability at Level 5. As for Rina and Betty, their Proactive musical behaviours clustered between Levels 2 and 3, which can be seen in all three charts respectively. However, in Rina's case, there was a peak at Level 4 in the middle of one reported period (week 13). As reported by the mother, Rina was imitating the rhythm and songs that were recognisable to her. In another diary entry, the mother Hailey referred to Rina's singing 'The Wheels on the Bus'. Overall, the Proactive musical behaviours over time demonstrated a constancy at lower levels for children at a younger age (Rina and Betty), and higher levels for older children, such as Lucy and Ellen. A similar feature could be seen in Figure 8.3b, which demonstrates longitudinal data of Proactive musical behaviours of seven young children who took part in the longitudinal stage of this study. However, the context of the Proactive musical behaviours needs to be considered when examining the musical growth of children, as there were a variety of sound-making and music-making activities that represented a lower Proactive level, such as operating sound media (Proactive) and technique practices on musical instruments, which served as facilitators for musical activities in other domains or higher levels of musical behaviours, such as dancing to music (Reactive) and playing musical pieces on a musical instrument (Proactive Level 5).

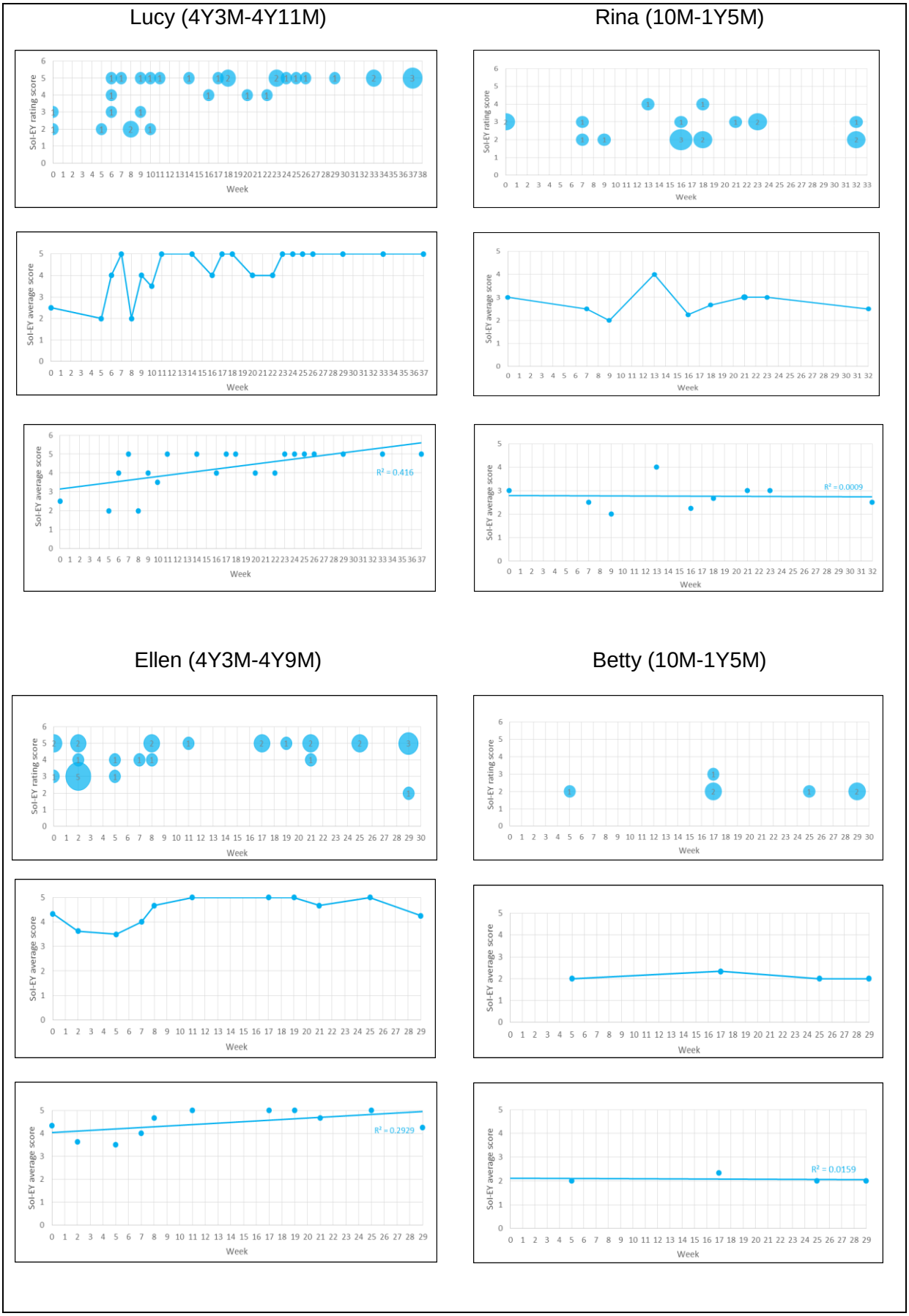

Figure 8.3a An overview of musical development in the Procative domain across four cases

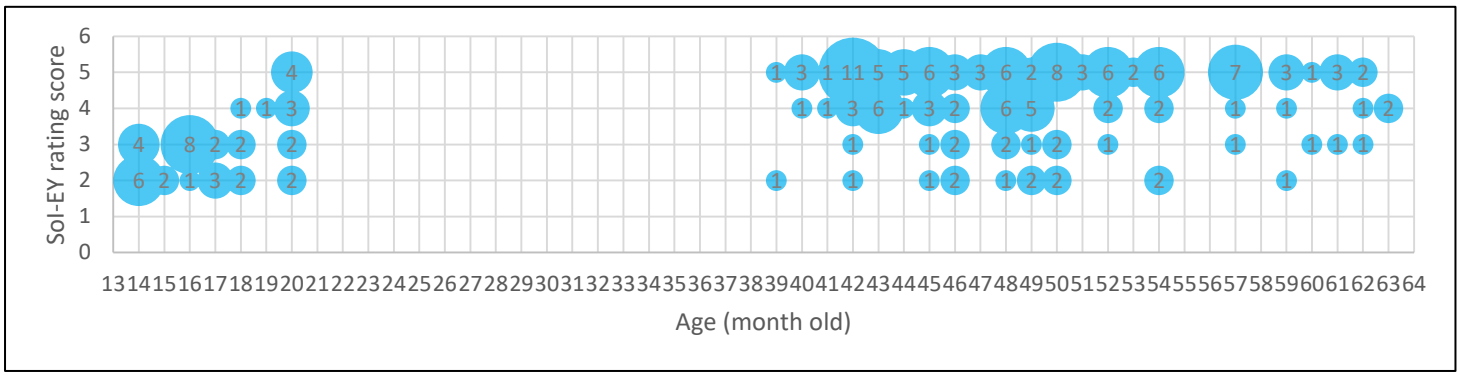

Figure 8.3b Longitudinal data of Proactive musical behaviours from the other 7 participant young children

In the first year of life, infants' Proactive musical behaviours are characterised by a variety of sound expressions through vocalisations, as well as using objects, such as vocal play, canonical babbling (Papoušek, 1996), or sound exploration by shaking or banging objects (Tafuri, 2008). In Rina's case, she was reported to play with wooden percussion and a hand-made shaker in the home environment, and was frequently joined by Hailey. Progression in sound-making was reported by Hailey when Rina was able to 'play confidently' and picked up the instruments without being prompted. The child's behaviours demonstrated Rina's intention to engage in sound-making activities by using musical instruments. A similar phenomenon was observed in Betty's case, as she tried to make sounds on Ellen's cello, as reported by the mother. According to the literature, around the age of one, young children start producing melodic utterances that are recognisable as music and songs from the child's musical culture (Chen-Hafteck & Mang, 2012). In Rina's case, she was reported to hum recognisable tunes, in which the element of 'rhythm' was perceived by the mother to be identical to the original tune. With respect to the learning pathway of singing learned songs, it was reported that young children are likely to be more interested in words (lyrics) before being able to master the detail of the melodic features of songs (e.g. Davidson, 1994; Moog, 1976; Welch, 1998), although this finding embraces other possibilities, depending on the context. Rina's mastering of rhythm related to her musical perception of rhythm, such as has been reported elsewhere to develop in infancy (Chang & Trehub, 1977b). In addition, Betty's vocalisation was partly through the imitation of Chinese words, which the mother had introduced through songs. Language learning, in this context, represents the production of meaningful sounds, which could be mapped onto Proactive level 3, according to the SoI-EY framework. Both Rina's and Ellen's vocalising and sound-making activities reflected their enculturation into English and Western musical cultures in terms of their singing repertoire

and manipulation of musical instruments, as well as the Chinese culture in terms of language exposure.

Young children were reported to be capable of singing their first songs around 2 years old (Moog, 1976), or younger if they attended weekly music sessions in which they had received regular musical exposure (Tafuri, 2008). Preschool children's singing is often characterised by incorporating known songs into their original singing, or vice versa (Hargreaves, 1996; Mang, 2005; Moog, 1976). The findings in this study revealed a variety of these combinations, in which not only the melodies (e.g. Figure 5.9), but also lyrics were combined with known or invented songs. For instance, both Lucy and Ellen were reported to change the lyrics around, which reflected their own experiences, or was done for entertainment purposes. In particular, Lucy was reported to add 'drama' into her invented singing, which the mother regarded as being influenced by the performing classes and the school Christmas nativity that Lucy attended. Barrett (2010) suggested that the function of inventing songs, which contain narrative elements, in young children's identity making is part of their 'musical and socio-cultural being'. Lucy's and Ellen's singing activities demonstrated their way of understanding and participating in their socio-cultural world, as well as showing evidence of their musical creativity (cf Barrett, 2006).

In addition to singing, children as young as Ellen were reported to learn to play musical instruments (e.g. participant child No 13), or would be learning a musical instrument in the near future (most of the participant children). In Ellen's case, Ellen's mother described her daughter's progress from technical exercises (Level 3) to playing a whole song (Level 5) on the cello, as well as singing along while playing (Interactive). There is limited research on aspects of young children's instrumental learning. Kooistra (2010) developed pedagogical strategies in informal piano lessons for children aged from 3 to 5, drawing on processes of young children's musical development in an informal learning setting in which a teacher is a participant and model, the role of play, and has healthy piano technique. Kooistra's (2010) assessment of a child after taking piano lessons for one year revealed the benefit of this approach to the curriculum on the child's musical development and her familiarity with the piano. More research is needed to address young children's instrumental learning, as it seems to be a prevalent phenomenon among the participant families who were part of Chinese diaspora in London.

Other Proactive musical behaviours found in the four cases included operating media, which translated as Level 2 musical behaviours. It was reported that young children had a tendency to play with a range of electronic musical toys or keyboards, and that the toys played conventional English nursery rhymes, Chinese children's songs or invented digital

music. For instance, Ellen and Betty were reported to enjoy activating an electronic musical toy so that they could dance to music together. Several participant young children were reported to play with an electronic musical keyboard book that contained a repertoire of traditional Chinese children's songs (e.g. No. 12, 13, and 18). Young (2008) noted, however, that such electronic toys with digital music were often musically impoverished and culturally narrow, usually limited to Euro-American nursery rhymes and popular Western classics. Nevertheless, the young children in this study had an enthusiasm for operating the media and dancing to music, which led to positive social interactions while dancing and also a creativity in dancing steps was observed. Furthermore, the media also provided a cultural link to Chinese music, as the young children could listen to the Chinese children's songs by playing the media.

8.2.4 Young children's musical development in the Interactive domain

Figure 8.4a demonstrates an overview of musical development in the Interactive domain across four cases, based on three different analytical perspectives – frequencies of musical behaviours over time (bubble charts), average levels of musical behaviours over time (line charts), and correlation analyses between SoI-EY levels and time (scatter plots). Figure 8.4a illustrates similarities between Lucy and Ellen and between Rina and Betty. For Lucy and Ellen, although there were Level 5 musical behaviours throughout the reported period, there were also a number of instances that represented lower levels in the middle of the reported period, particularly in Lucy's case. This variation demonstrated that, whilst they were capable of singing or making music with others, they still exhibited musical interactions with the use of short musical fragments or patterned sounds. Furthermore, the decrease of the trendline, in Ellen's case, may be related to a non-availability of the media that Ellen used to play and sing along with in the early stage of the reported period. For Rina and Betty, their Interactive musical behaviours generally remained at Level 2 over time, with occasional point scores at Level 3 in the middle of the reported period. This demonstrated their musical ability to interact with others musically by vocalising or sound-making with objects. With respect to their Level 3 musical behaviours, Rina showed imitation of vocalisation from the mother, as well as tapping a similar rhythm when copying her mother. Betty's Level 3 musical behaviours demonstrated her imitation in speaking Chinese words copied from her mother Vicky, who emphasised the words while singing. Overall, young children's Interactive musical behaviours presented a variance in levels over time, and a supporting environment of materials and people seemed to play an important role. A similar feature could be seen in Figure 8.4b, which illustrated longitudinal data of Interactive musical behaviours amongst seven young children who also took part in the longitudinal phase of this study. Figure 8.4b demonstrates that, while young children seemed to exhibit advanced levels of Interactive

musical behaviours, when they were older there were still lower levels of musical behaviours that represented their imitation of sounds or musical fragments as they learned new songs.

Figure 8.4a An overview of musical development in the Interactive domain across four cases

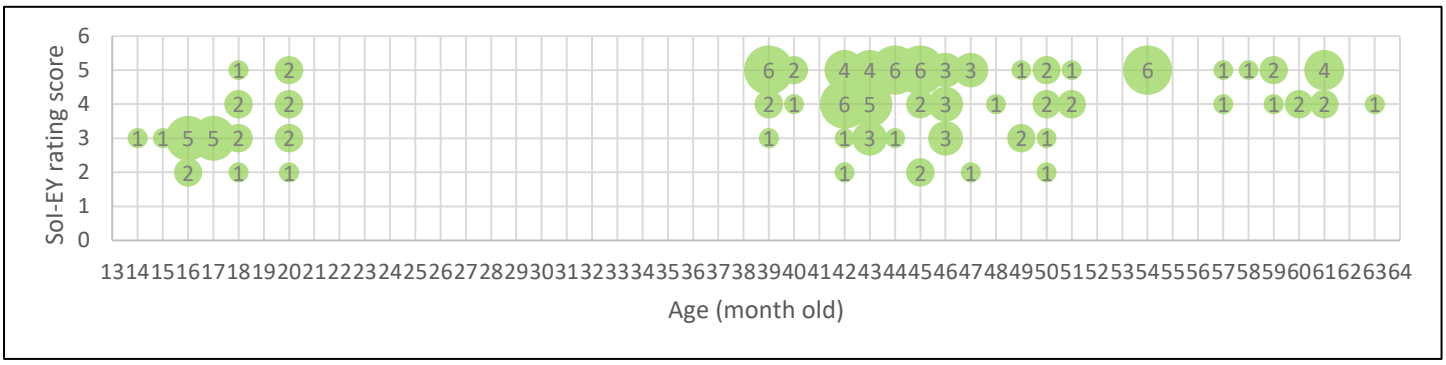

Figure 8.4b Longitudinal data of Interactive musical behaviours from the other 7 participant young children

Early communications between infants and caregivers are characterised by vocal interactions. For instance, when mothers and infants communicate effectively, each is highly attuned to the vocal, physical and facial expressions of each other (Dissanayake, 2000; Malloch, 1999; Papoušek, 1996). In Rina's case, vocal interactions between her and the mother were demonstrated in the video recordings, in which the mother intuitively responded to Rina's vocalisation by imitating her, which seemed to stimulate a reciprocity in Rina's new vocalisations. The mother-child dyad also demonstrated a turn-taking feature that was similar to dialogues. Boysson-Bardies (1999) wrote that the conversation feature in which infants and mothers take turns vocalising was regarded as the beginning of language development. From a musical point of view, Rina and her mother imitated musical features of each other's vocalisations, as well as initiating new vocalisations for the other to copy. On the other hand, Betty's sound interaction was characterised by her imitation of Chinese words spoken and sung by her mother Vicky. This might reflect the interrelationship between speech and singing in Betty's vocal imitation (Chen-Hafteck & Mang, 2012).

Young children learn to sing new songs by imitating musical motifs. For instance, Davidson (1985) studied young children's melodic reproduction of familiar songs, and the findings indicated that young children firstly reproduced melodic profiles (rise and fall of contours), which was followed by the reproduction of intervals and the sounds between the intervals. However, in Lucy's case, when she was listening to contemporary children's songs, which contained a complex feature, she tended to imitate the patterned sounds at the beginning or end of the musical phrases, as shown in Figure 5.14. Ellen also demonstrated her ability to sing along with the prolonged notes of a popular song, as shown in a video recording. It seemed that, despite the complex melodic and rhythmic features of the song, Lucy and Ellen were able to grasp those parts that were easier to copy. The learning of new songs represented their Interactive musical behaviours at Levels 3 and 4. This also reflected their musical exposure which was not limited to conventional child-oriented songs that had

simpler features, but it also included longer songs, such as contemporary Chinese children's songs and English pop songs.

8.2.5 Young children's musical development perceived by the mother

The mothers' reports on the musical development of their young children provided an additional perspective, in addition to the analyses of young children's SoI-EY ratings over time, as presented above. In the final interview, all of the participant mothers were asked about any musical progression that they had noticed throughout the six months of research participation. Interestingly, there were similarities between Lucy and Ellen and between Rina and Betty in terms of the musical domain activities reported by the mother. For Lucy and Ellen, their musical progression in the Proactive domain was noted by their mothers. For instance, Lucy was reported to sing English nursery rhymes more fluently and confidently, which the mother contributed the progression in Lucy's proficiency in English. Ellen's musical progression was perceived in her cello playing, as she could play the whole piece of 'Twinkle Twinkle' by the end of the reported period. For Rina and Betty, their musical progression in the Reactive domain was mentioned by their mothers. For example, Rina was reported to enjoy dancing to music and dancing more frequently. Similarly, Betty's musical progression was perceived to be taking the initiative to play music by pressing the electronic musical toy and starting to dance. Their musical responses with bodily movement were more noticeable by the mothers, compared to their sound imitation, vocalising and sound-making, in which they generally had not been capable of singing recognisable tunes or whole songs. The shift of noticeable musical abilities from bodily responses to music to independent singing may reflect mothers' different musical expectations depending on the child's age. The musical abilities of singing and music-making were regarded to be noticeable achievements for older children, compared to their strucutural and cultural understanding of music. Nevertheless, it is worth noting that, in Lucy's case, her imaginative drama evolved from her singing which was regarded to be musical progression by her mother, and demonstrating additional perspectives of musical development from the mother's point of view.

The concept of 'zone of proximal development' (ZPD) (Vygotsky, 1978) that was addressed by Voyajolu and Ockelford (2016) in understanding aspects of young children's SoI-EY levels is exemplified in this study. Voyajolu and Ockelford (2016) indicated that the child's musical ZPD lay between the SoI-EY levels, and a child is likely to exhibit higher SoI-EY levels with the support of more advanced peers or adults, such as in group music-making activities (see Section 3.2.2). This could be found in Lucy's case, in which the mother highlighted the role of her friends and older sister who sang with Lucy and enabled her to complete the focus songs (See 5.4.3). For Lucy, her ZPD lay in Levels 4 and 5, and her

peers and older sister played the role of advanced others who supported Lucy's musical development. Another example could be found in Ellen's cello practice, as she was able to finish the piece with the mother's vocal prompting (see Section 7.4.5). For Ellen, her ZPD lay in Levels 4 and 5, and her mother played the role of the advanced adult that supported her musical development. As the two examples above both demonstrated young children's ZPD between Levels 4 and 5, more investigation is needed to explore other possibilities of how the ZPD concept could be applied in understanding the SoI-EY framework.

Furthermore, as described by Lucy's mother, the pathway of how Lucy learnt a new song started with listening and dancing along, followed by singing along and singing in different situations, and how the singing would develop into a drama play that was associated with the music. This process could be mapped onto a pathway from Reactive, Proactive, and Interactive and Reactive combined, according to the SoI-EY framework (Figure 5.21). Voyajolu and Ockelford (2016) proposed a developmental trajectory, in which young children developed musically from Reactivity towards Interactivity and Proactivity. In Lucy's case, the musical development did not end at Proactivity. Instead, it was extended to a narrative expression with regard to music, which could potentially be mapped onto Level 6, according to the original SoI framework. As the mother noted, Lucy's inspiration for combining drama along with singing might be related to her experiences in attending the performing classes and the nativity show at school. A nurturing musical environment seemed to play a role in this expanded developmental trajectory.

8.3 Musical environment of young children within a family context

This section presents a discussion on the potential factors and/or mechanisms of the socio-cultural musical environment of young children of Chinese diaspora in London that might play an influential role in shaping their daily musical experiences and musical development. An overview of the adapted ecological model, based on the findings from this study, is presented, which is followed by the discussion of aspects of each system that might be influential in young children's musical development. A model that might provide a perspective on linking aspects of the SoI-EY framework with the ecological model is presented.

8.3.1 Overview

Figure 8.5 demonstrates a revised ecological model to address potential socio-cultural factors and mechanisms that contribute to the musical development of young children who

are part of Chinese diaspora in London, based on the research findings in this study. Revised from Figure 3.6, which drew on the current literature on how the family context might shape young children's musical development, Figure 8.5 seeks commonalities, expansion and diversity in the musical environment of this diasporic community. Compared with Figure 3.6, a new 'Techno-Subsystem' (Johnson & Puplampu, 2008) that highlighted the role of media and technology in young children's home environment was added to the model. Furthermore, a new element emerged within the Mesosystem – Network in the community. This represented the social networking of the families, which enabled the young children to attend playdates and parties in the local area, in which young children were provided with opportunities for musical engagement with their friends and experienced music of different cultures. Furthermore, a social network within the Chinese community existed, which was related to a 'Chinese music group' as one type of musical provision in the community. This phenomenon is discussed in the following subsections.

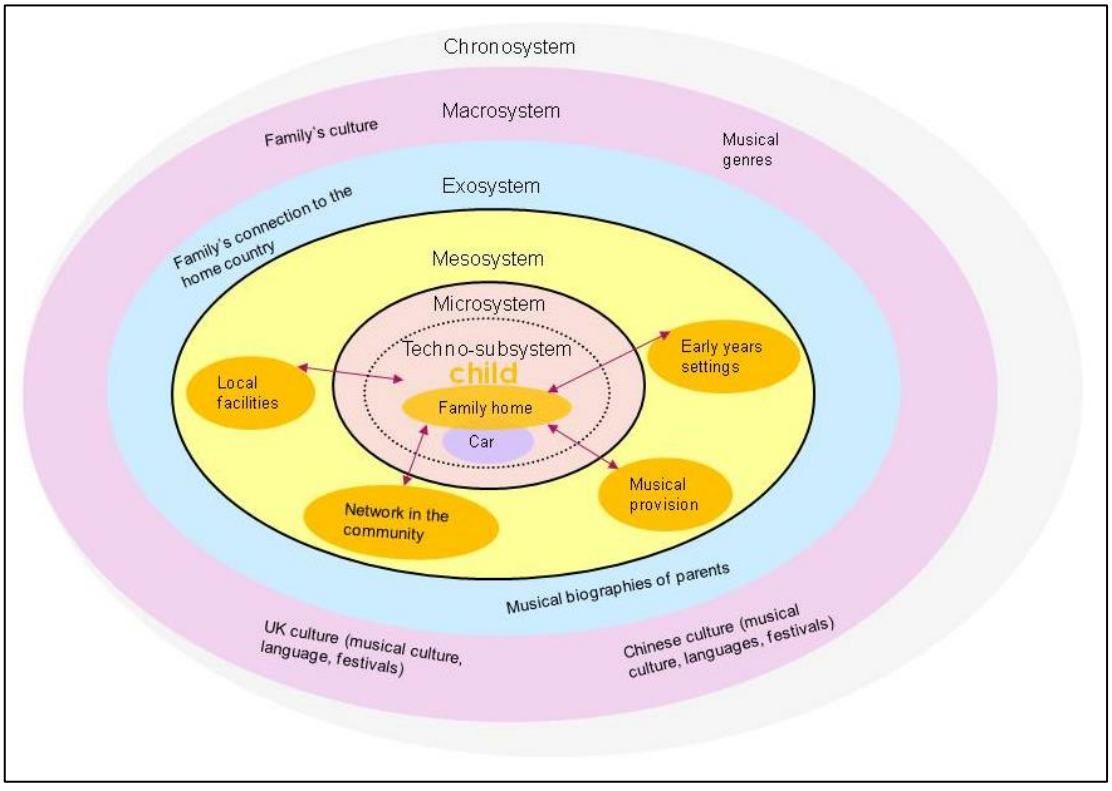

Figure 8.5 A revised ecological model of young children's musical environment, based on the findings

8.3.2 Microsystem

The Microsystem represented young children's musical environment in their family home. Family is the first environment that a child encounters (Gingras, 2012), and the home environment and family members play an important role in nurturing young children's

musical development and introducing them into the local musical culture (Campbell, 2011; Finnegan, 1989). Based on the findings in this study, the discussion below is focused on the following aspects: the prevalence of media and technology in the home environment, the role of family members, musical experiences on car journeys, and parenting practices and young children's musical development.

8.3.2.1 The technology and media in the home environment

All of the participant children in this study were immersed in a media-rich environment on a daily basis (Chaudron, 2015; Marsh et al., 2015; Rideout & Hamel, 2006) . When it came to musical activities in the home, the parents commonly referred to media such as YouTube, TV, CDs and DVDs, tablets, musical toys and radio. Young children were reported to sing and/or dance along to the recorded music playing from various forms of media in the home environment or in the car. Media such as DVDs, TV and tablets were characterised by multi-modal features (Marsh, 2005; Young, 2008b), and music was usually experienced along with images and/or other sensory experiences. For instance, in Lucy's family, Lucy and her sister frequently watched DVDs of contemporary children's songs and were prompted to dance rhythmically with the dancers in the music videos. Furthermore, the young children took an active role in operating or interacting with the media (Gingras, 2012; Lum, 2008). For instance, Lucy was reported to choose her favoured CDs to play while having breakfast, and children as young as Betty were able to press on the buttons of an electronic keyboard toy in order to dance along to music. In general, musical experiences of contemporary young children in their home environment are reported to be largely shaped by technology and media (e.g. Ilari, 2011; Young, 2008b). By dancing and singing along to the media (Reactive and Interactive), young children developed their musical ability to sing and make music independently (Proactive), and became familiar with the cultural expression and meanings of music (Reactive).

The availability and choices of the music to be played on the media appeared to reflect the family's life style, cultural background and musical preferences. The similarities of musical exposure through media among the participant families also reflected their immersion in local English culture, the family's links to Chinese culture, and the Western popular culture favoured by young children. As they were residing in London, most of the participant families reported that their child watched the children's BBC TV channel Cbeebies at home. Young children would sing and/dance along to the theme tunes of the programmes, as was the case for Lucy. In addition to the children's channel, the families would also watch music-related programmes together, such as 'Britain's Got Talent' in Lucy's case and 'Strictly Come Dancing' in Ellen and Betty's case (also reported by family No.12). Furthermore, being part of the Chinese diaspora, the families possessed various

media products which they had brought from their hometown or that their relatives had brought when they came to visit. These media products included CDs and DVDs of contemporary and traditional Chinese children's songs, Cartoons in Chinese (No.12), and an electronic keyboard book for the children to press and listen to traditional Chinese children's songs while seeing corresponding pictures and lyrics (e.g. No.12, 13 and 18). These media products not only introduced music from the Chinese culture to young children, but also seemed to enhance young children's and the family's ethnic and cultural identity (Gingras, 2012; Lum, 2008). The children also had their preferred music to listen to and/or watch, and the Western popular culture which targeted young children seemed to be influential. For instance, there was a prevalence of songs from Disney princess films, such as Frozen, among the participant children (e.g. Lucy, Ellen, and No.1,2, 10,11,15), as they were frequently reported to play the songs across various media, such as YouTube, CDs and tablet apps, which led to their singing-along, independent singing or improvised singing. Research has suggested the role of media as taking the role of a facilitator for young children to receive or create children's popular culture (Ilari, 2011; Marsh, 2005). Findings in the current study confirmed that, through consumption of the media and peer group influences, young children who were part of Chinese diaspora in London were also immersed in Western popular musical culture. The role of media also became an integrated part of cultural transmission, which could be seen in young children's daily experiences of music from local English culture.

Despite the commonality of media and technologies available for all participant families and similar musical exposure, as discussed above, the families also had different choices when it comes to their listening repertoire, which depended on their unique life style, cultural backgrounds, musical biographies and preferences. For instance, in Lucy's case, the family would watch and dance to Korean and Japanese music videos from YouTube, which had a link to the father's musical preferences. In Rina's case, a wide range of musical types was played on YouTube or CDs, such as Western Classical music, Jazz, English pop songs and Irish music, linked to her parents' origins and musical tastes. In Ellen and Betty's case, they would listen to Suzuki cello music CDs on car journeys, due to a commitment to the Suzuki style for Ellen's cello learning. The uniqueness within each individual family highlighted the role of the family that created and maintained the family's tradition and identity in and through music (Barrett, 2009; Custodero, 2006).

A striking finding of this study was the influential role of new technologies (Ilari, 2011; Marsh et al., 2015; Young, 2012) that become an integrated part of young children's musical lives. The new technologies included touch-screen devices, such as tablets and smart phones, and the Internet and the applications to be used on these devices. For the families

who offered tablets to their children, the musical experiences of these children were largely derived from and shaped by these devices. For example, in Ellen's case, she was frequently reported to use a Frozen Karaoke application on the iPad, which allowed her to sing along with her favourite Frozen songs throughout the day and in different locations, on her own or with others. The portable feature and repeatable function, along with the influence from Western popular culture and its visual presentation, seemed to encourage Ellen to become 'addicted' to the songs as well as the iPad. Another family (No.12), who also had shared a tablet in the household, provided a video clip showing that the child was playing a musical piece on the iPad. She used her fingers to press different keys, prompted by the colours on different notes on the keyboard. The musical instances above showed that the tablets and musical applications can provide interactive elements in young children's musical engagement. Buckingham and Scanlon (2001) suggested that 'edutainment' materials are more interactive than formal schooling. They defined edutainment as 'a hybrid mix of education and entertainment that relies heavily on visual material, on narrative or game-like formats, and on more informal, less didactic styles of address' (p.282). The musical applications experienced by the children in this study seemed to contain edutainment qualities, and the children's proficiency and constant interest in singing might be related to the use of tablets and applications, although other social factors, such as influences from children's popular culture, also need to be considered. On the other hand, Ilari (2011) suggested that there might be a positive effect on young children's music learning if the parents and educators expanded the experience of new technologies into live, playful, and interactive activities that take place in real life.

While the new technologies seemed to provide abundant musical stimulations for young children, providing tablets to their children was not a prevalent option among all the participant families in this study. Most parents were concerned about the negative impact of technology on young children, such as eye health and passive learning. A Taiwanese study indicated that the parents' greatest concern regarding their children's use of screen media was the negative effect on their children's eye health (Wei & Chuang, 2016). However, whether the association between the use of screen media and eye health is a phenomenon of Chinese culture is unclear. On the other hand, parents who provided tablets or other media to their children were happy with its interactive features and admitted that it offered a break from parenting when their children were occupied by media (de Vries, 2009), which was also reported by family No.12. To sum up, new technologies, such as tablets and other touch-screen devices, have become more common in contemporary households (e.g. Ofcom, 2017). However, the role of these new technologies in young children's musical lives and

their influence on their musical development, with the consideration of various social factors, is an under-researched area and requires further investigation.

Overall, the omnipresence of technology and media in the family home seemed to provide a rich environment for young children to experience music and develop their musical abilities. Johnson and Puplampu's (2008) 'Techno-Subsystem' (see Figure 3.5), which constitutes the recognition of technology and media in young children's daily lives and how a developing child interacts with this environment, provides a useful perspective in understanding the role of media and technology in young children's musical experience and development. Therefore, the concept of 'Techno-Subsystem' has been added into the revised ecological model of young children's musical development (Figure 8.5).

8.3.2.2 Musical experiences on car journeys

Car journeys are regarded as an extension of the home environment. Young children were reported to experience music on car journeys (Lamont, 2008)., and they would, for instance, sing along to the music or improvise their own songs (Barrett, 2009). The participant children in this study were reported to listen to music and sing along in the car. With regards to their music-listening experience, the families would play the radio or CDs on their car journeys, and the selection of music depended on the family's musical preferences, life style or values regarding music learning (also see 8.3.2.1). For instance, in Rina's and Ellen and Betty's cases, the mother, who was the driver, would choose radio stations that played English popular music. The children were reported to move and sing along to popular music. Ellen's mother Vicky reported that the children seemed to prefer listening to popular music for its uplifting features, although she would also play cello music CDs for Ellen to listen to, in order to fulfil the Suzuki music-learning pedagogy. On the other hand, Lucy's family listened to the radio stations that played old English songs or Classical music, as a result of the parents' musical preferences. With respect to CDs, the families would go for a range of musical types, such as Disney Princess songs (Lucy), contemporary children's songs (Ellen and No.15) and audio-stories that contained background music or sound effects (No.20). Some children were also reported to exhibit spontaneous singing on the car journeys (e.g. Ellen). Lucy was also reported to sing the children hymns and discuss different hymns with her sister Julie in the car. In general, car journeys provided additional musical opportunities for young children that were extensions of their family home. Music seemed to be a constant companion on the family's car journeys in all of the reported instances.

8.3.2.3 The role of family members in young children's musical development

The role of family members, including parents and siblings, seemed to play an influential role in shaping young children's musical development. For instance, mothers are regarded as

singing mentors for their young children (Trehub & Gudmundsdottir, 2015), as the young children developed their singing through their mothers' intuitive imitation, prompts and modelling of their vocalisations. Gingra's (2012) study of family music-making suggested the role of parents' and siblings in influencing musical identity and the behaviours of young children – first as musical guides and later on as musical co-players. In Rina's and Betty's cases, musical interactions were characterised by vocal interactions between the child and the mother. In particular, Betty's mother Vicky provided an exclusive Chinese environment for Betty through speech and singing. Siblings also seemed to play an important role. In Lucy's case, for example, her older sister Julie played the role of 'teacher' who corrected or complemented Lucy's singing. Also noted by the mother, Julie expanded Lucy's musical exposure by introducing her preferred musical genres to Lucy, such as English pop songs. They also played musical games together. As for Ellen, she would sing traditional Chinese children's songs to Betty, as reported by the mother. Furthermore, Betty seemed to show familiarity with the Frozen songs that Ellen frequently listened to. Overall, the findings of this study seemed to be consistent with the current literature, while the musical biographies of the siblings also seemed to be influential. It is also worth noting that, musical interactions within the family home were not limited to the family members, but other friends from the family's social network in the community, as well as the relatives who visited from their home countries, might also bring their musical cultures into the family. As part of Chinese diaspora in London, young children's exposures to music of the Chinese culture and Chinese language were enhanced through singing activities amongst siblings and by the relatives' visits to the family.

8.3.2.4 Parenting practice and young children's musical development

For many families, music is integrated into parenting practices (e.g. Young, 2016). For instance, music has been reported to regulate the emotional state of infants and young children (e.g. Barrett, 2009) and to establish a sense of identity within the family (e.g. Custodero, 2006; Gingras, 2012). Findings from the four case studies, as well as from other participant families, revealed that the parents use sound and music in their parenting practice. For instance, Rina's mother reported that she sang Rina's favourite songs to soothe her when she was grumpy or entering a new environment (Reactive). Sound and music was also used to establish the daily routine of young children. For example, in Lucy's and Rina's families, there were 'bedtime rituals'. In Lucy's case, the mother would read Chinese chants with Lucy, which had a rhythmic structure (Interactive). In Rina's case, the mother Hailey used bell-ringing to signify the time for a meal. These parenting strategies integrated with music seemed to play a role in young children's emotional development and

to enhance young children's understanding of the social meaning of sound and music within their family.

The parental views on music learning, which also seemed to be influential in musical provision for young children, is discussed in 8.4.4. Overall, the influential factors on young children's musical development in their family home, within the context of being part of the Chinese diaspora in London, seemed to be in accordance with the current literature. However, special features within the family home were found, including the availability of media brought from their home countries that introduced Chinese music and language, and the visits/migration of relatives who might come to visit and bring examples of musical cultures from their home countries.

8.3.3 Mesosystem

The Mesosystem represents the family's participation in social networks, organisations and facilities in the local community. Current literature addressed, for example, private musical sessions, which have been reported as characterised by parental involvement (e.g. Adachi & Trehub, 2012), including the benefits of parents attending weekly musical sessions in supporting young children's musical development (e.g. Tafuri, 2008). In this respect, the participant children in this study attended a variety of musical or music-related provision in the local area, such as tap-dance and performing classes (Lucy), Ballet (Ellen), local music groups (Rina and Ellen) and private instrumental lessons (Ellen). Amongst the musical provision in the local community, young children were immersed in a Western and English musical culture, including English nursery rhymes, music for Ballet and tap-dancing, and English musicals. For instance, Rina and Ellen had attended a range of music groups either held in the local libraries or run privately, which involved singing English nursery rhymes with an adult. With the frequent musical exposure, Ellen was reported to sing a number of English nursery rhymes when she entered school, which built up her overall confidence. Pitt and Hargreaves (2017) explored the rationale of group music activities for parents and young children in UK Children's Centres by investigating the perspectives of parents and practitioners. Their findings suggested that there were benefits in the social, cultural, emotional and cognitive development of young children in group music activities for parents and young children. This finding was consistent with the mother Hailey's expectation of music groups in nurturing Rina's social skills.

Amongst the variety of local musical provision, in particular, Rina, Ellen, Betty and several participant children (e.g. No. 6, 9, 14, 15, 20) attended 'Chinese music groups' in their local area, mainly to learn Chinese through music. A Chinese music group is normally set up by a Chinese mother, who leads musical activities and sings traditional Chinese children's songs

joined by mothers and their children. Chinese music groups were also closely related to the Chinese network in the area, as the parents in the music group also arranged playdates for their children to have further language and music exposure during the playdates, which was the case for Rina's and Ellen and Betty's families. The functions of the Chinese music group and its potential effect on young children's musical development require further investigation.

In addition, young children in this study experienced music in early years settings, in which the family's supporting role seemed to facilitate young children's music-making, such as attending Christmas nativity shows at school (Lucy). Local facilities such as the church and shops were also reported to provide opportunities for young children to experience music, based on their family's religious affiliations and lifestyle. For example, both Lucy's and Rina's families were Christian, and the family's attendance at weekend service allowed the children to experience music in a Christian culture, such as children's hymns. Therefore, young children's musical experiences in the local community are likely to be shaped by the family's positive relationship with the institutions and the family's culture, such as the parents' religion.

In general, these young children's Mesosystem reflected a musical enculturation into local English musical culture through, for example, attending early years settings and local musical provision. However, a prevalent phenomenon was noted, that of attending Chinese music groups, which seemed to function as language learning opportunities and the building of social networks in a local Chinese community.

8.3.4 Exosystem

The Exosystem represents the more remote factors in which young children do not directly participate, but which might play an influential role in shaping their musical development. In this study, the musical biographies of the parents and the family's connections to their home countries were considered to be influential in shaping young children's daily musical experiences. Parents' previous musical experiences, such as experiences of instrumental learning, were reported to be associated with their musical activities with their children (e.g. Custodero, 2003; Ilari, 2005). In this study, the musical biographies of the parents influenced the musical provision in the family home and their beliefs and values placed on music-learning. For instance, Rina was responsive to a variety of musical genres that were playing in the family home (Reactive), including English and French nursery rhymes, Chinese children's songs, Western classical music, Irish music, Jazz, the Beatles, and English rock music, which reflected the diversity of her family's cultural backgrounds and musical preferences. In Lucy's family, they listened to and danced to Korean and Japanese popular music, which was introduced through the father's musical preferences. In Ellen's case, the

mother Vicky's previous music-learning experiences had led her to provide a similar musical environment for her children to nurture their appreciation of music. However, her negative experiences of practising the piano and reading notation led her to choose the Suzuki method, in which the foci on listening and positive encouragement were favoured. It is perhaps worthwhile noting that most of the participant mothers had music-learning experiences (except for No. 3, 4, 5, 7, 19), and most of the mothers expected their children to learn a musical instrument, even if they (themselves) had not had such experiences before (No. 3, 4, 5 and 19).

The family's connection to their home countries was regarded as influential in the children's musical development. The frequent connection with their Chinese relatives represented more exposure to a Chinese language environment and, potentially, more opportunities to experience music from within the Chinese culture. For instance, it was reported by Rina's mother that, after a trip to China, Rina seemed to imitate a Chinese vocalisation of tonal utterance (Proactive). The new behaviour seemed to demonstrate an influence of language exposure on vocal development.

8.3.5 Macrosystem

The Macrosystem represents the cultural influences on young children's musical exposure and development. These could be seen, for example, in the musical genres exposed to the participant young children within their family context. Across the four cases, as well as for other participants in this study, young children were experiencing music that mainly represented English culture, Chinese culture, Western musical culture, as well as influences from the family's culture. Music from the English culture included English nursery rhymes, music from the children's TV channel (e.g. CBeebies), English popular music, children's hymns, and English musicals. Through the family's participation in the local community and the consumption of local TV and radio, young children experienced music from the English context on a daily basis. Furthermore, as part of the Chinese diaspora in London, the family provided Chinese music for their children, mainly in the genre of child-oriented songs, such as traditional children's songs and contemporary children's songs. Other genres of Chinese music, such as popular music, folk music, and traditional music, although provided by several families, were not common genres experienced by all the participant young children. It is worth noting that, these musical exposures seemed to be under a broader influence of Western musical culture. For instance, many Chinese children's songs had originated from English nursery rhymes, such as 'Little Star', 'Two Tigers' and 'Mr Wang Had a Farm'. Musical genres such as Western Classical music, Ballet music, Christian music, and Disney music, are not only part of the English culture, but also part of other cultures, such as

contemporary Chinese culture (Huang, 2012). These cultural influences seemed to be filtered by family culture, as parents would select music to which their children should be exposed, based on the family's cultural origins and musical preferences (Section 8.3.4). Campbell (2011) wrote that young children's musical enculturation began within the family home, and gradually extended to the local community and influences from the media. For the participant families in this study, although originating from similar cultural backgrounds as the overall Chinese diaspora in London, the musical culture provided by the family differed from one family to another, which could be seen clearly in the data from the three case study families.

8.3.6 Chronosystem

The Chronosystem represents the temporal patterns or events that were considered to be influential to young children's musical development. In this aspect, different factors were revealed across the four cases. For example, Ellen's daily cello practice seemed to contribute to her familiarity with the musical piece. For Lucy's and Rina's case, annual visits to China or visits by the relatives from Taiwan seemed to provide them with more exposure to the Chinese language and the wider culture, including the musical culture, which likely influenced aspects of their vocalisations and vocal development, as exampled by Rina's vocal imitation of a Chinese tonal-utterance as reported by the mother.

8.4 Discussion of young children's musical development within a family context as part of Chinese diaspora in London

This section presents the family's role, being part of the Chinese diaspora in London and how that might shape the musical development of young children in this study. The following aspects are discussed: the existence of a Chinese identity within the participant families; young children's musical exposure to music in the Chinese context, parental values concerning young children's music learning; and the influences from Western musical culture. A summary is presented to end the section.

8.4.1 A 'Chinese identity' within the families

Skeldon (2003) noted that a diaspora is characterised by the retention of its distinct identity that is not assimilated into the host society. The findings of this study suggest that, whilst the participant families lived a Western-style life in general, there is a Chinese identity existing within and across all of them, including the three case study families. All of the participant mothers emphasised that their children should not forget their cultural origins as being Chinese. The retention of a Chinese identity within the participant families was reflected in

their language usage and in their values regarding parenting and music learning, which most likely contributed to a distinctive musical environment for the young children of this diasporic community in terms of their musical exposure and opportunities for music learning.

A common feature across all of the participant families was the retention of the Chinese language. For the families with Mandarin as the mother tongue of both parents, a Mandarin speaking environment was provided for their children in the family home, although it was reported by the mother that English might be spoken between siblings (e.g. Lucy and her sister Julie). For the families in which only the mother spoke Mandarin, the families communicated in English, but the mothers spoke Mandarin to their children when the father was absent. In addition to speaking Mandarin that represented a Chinese identity, there was evidence that participant families also shared the value of filial piety, which is related to Confucianism and embedded in traditional Chinese culture (Sham & Woodrow, 1998). For example, in Lucy's family, the mother Clare emphasised the importance of filial piety and requested Lucy and Julie to express appreciation when they received the New Year red envelopes from their parents (Lucy Interview [3]). In Ellen and Betty's family, the mother Vicky also expressed her intention to 'install' the concept of filial piety in her children, although she recognised its contradiction with Western values and that it might not be understood by her children (Ellen & Betty Interview [1]). In addition, while participating in English cultural events in the community, the participant families carried out Chinese cultural practices to various extents, such as in celebrating Chinese New Year, which occurred, for example, in all of the three case study families. Lucy's mother Clare also noted that the weekly contact with their grandparents in Taiwan was part of their Chinese identity. An overview of how the participant families retained their Chinese identity which characterised them as part of Chinese diaspora in London contextualised the young children's exposure to music and language in such a cultural environment, which also underpins the parents' distinctive values regarding the music learning of their children. A discussion of young children's musical experiences and development within the family context as part of the Chinese diaspora in London is presented in the following sub-sections.

8.4.2 Exposure to music in the Chinese context

With a Chinese identity existing in the family, music associated with Chinese culture could be introduced to the young children. Findings from this study reveal a prevalence of Chinese children's songs as a preferred genre among the families of the Chinese diaspora in London, although the exposure to other musical genres, such as popular music and folk music, were also reported by some of the participant mothers. However, among the three case study

families, Chinese children's songs was the exclusive musical genre that was provided within the family environment when it came to exposure to Chinese-related music.

There were two types of Chinese children's songs experienced by the participant children: traditional and contemporary. Traditional Chinese children's songs are conventionally composed with a shorter length, a suitable pitch range for children, a major key, and a 4/4 meter in its melodic feature, along with lyrics in a child-focused language which seeks to connect with their life experiences (Hsu, 2004). In this study, traditional Chinese children's songs were introduced to the young children largely through live singing. For instance, Vicky reported that she frequently sang traditional Chinese children's songs to Betty, as she believed singing to be the most appealing way for young children to learn a language. Maternal live singing of traditional Chinese children's songs was also prevalent among other participant families (e.g. Nos. 3, 5, 6, 9, 12, 18 and 20). Moreover, a number of participant families attended the Chinese music group held in the local area (e.g. Rina, Ellen, Betty, Nos. 6, 8, 9, 14, 15, 20), in which traditional Chinese children's songs were sung in a group context and integrated with other musical activities. The common sung repertoire among the participant families derived from the parents' childhood memories, including 'Mr Wang Had a Farm', 'Little Star', 'Butterfly', 'Little Donkey', 'Great Brother and Daddy', 'Little Sister is Carrying a Doll', 'Good Bunnies' 'Goose, Goose, Goose', which reflect the diversity of Chinese origins of the parents and also influences from Western nursery rhymes. However, both Hailey and Vicky expressed difficulties in recalling the lyrics of Chinese children's songs, which led them to learn the songs from YouTube or a Chinese music group. Besides singing, some young children in this study experienced traditional Chinese children's songs through media, such as CDs, DVDs and an electronic keyboard book that the families or their relatives brought from their home countries (Nos. 1, 10, 12, 13 and 18). Chen-Hafteck and Mang (2012) wrote that traditional children's songs across the cultures 'play a significant role in providing a means of communication between young children and adults, and transmit sociocultural values and customs to the new generation' (p.269). In this study, the singing of traditional Chinese children's songs not only promoted social interactions and daily routines within the family, it also represented the transmission of Chinese cultural heritage through the children's songs. Through live singing in the family and Chinese music groups, young children in this study were reported to be capable of singing numerous traditional Chinese children's songs independently (e.g. Lucy and Ellen), and incidentally demonstrating their musical development in the SoI-EY Proactive domain.

Contemporary children's songs refer to the songs produced by the children's media in the forms of DVDs or audio CDs. For example, in the 'Yoyo Roll Call' DVD series, which was provided in Lucy's family, each children's song was presented in a music video in which the

rhythmic bodily movement along with music was emphasised. In each track, a group of young dancers danced rhythmically to the songs against a colourful background (e.g. Figure 5.4b). In the musical aspect, these songs were longer than the traditional Chinese children's songs and had more complex melodic and temporal features (e.g. Figure 5.14). Young children in this study were reported to dance to the music videos on children's DVDs whilst watching. For example, Lucy was frequently reported to watch and dance to the 'Yoyo Roll Call' DVD series or to listen to its companion CDs when spending time at home (R5). With familiarity with a tune, she would hum short tunes throughout the day (P4). The mother Clare emphasised the quality of the product in terms of music and visual effects that led her to provide the DVD series to Lucy. Overall, the young children in this study experienced contemporary children's songs mainly through media. The longer length of the songs did not prevent young children from learning to sing. Instead, they seemed to grasp certain of the easier parts to learn and hum along. The dancing steps showed on the video might also shape young children's cultural expression when listening to contemporary Chinese children's songs.

For many participant families in this study, including the three case study families, the primary reason for providing Chinese children's songs to their children was to introduce the Chinese language to them, with the purpose of building links to the cultural origin of the family and/or communicating with an older generation. Songs have been widely used to facilitate foreign language learning in the classroom context for its benefits both to linguistic acquisition (such as vocabulary, rhythm and grammar) and for the learning experience to be enjoyable (Davis & Fan, 2016; Millington, 2011; Richards, 1969). In particular, Millington (2011) has suggested that songs can be used as a tool to improve listening skills and pronunciation. It is noted that where the learning of the Mandarin language was a concern, Chinese children's songs were exclusively chosen by parents as effective stimuli, which indicated an emphasis on the children being exposed to the language, as well as the parental perception of the children's songs being an appropriate musical type for their children. Chen-Hafteck and Mang (2012) argued that the musical features of children's songs differed from one culture to another, depending on the functions of the children's songs in the society. For the participant families who were part of the Chinese diaspora in London, Chinese children's songs were used for facilitating Chinese learning and to build a connection to a parental home country. In addition, it is noted that the provision of contemporary children's songs appeared in the families in which Mandarin was spoken by all of the family members. While all of the participant families chose child-oriented music for the purpose of language learning, the children's current language ability might affect the

selection of traditional or contemporary children's songs, which both had distinctive features.

In addition to the Chinese children's songs, other musical genres within the Chinese context experienced by the participant young children included Chinese folk songs (Nos. 13 and 18), Chinese popular songs (Nos. 2 and 7) and traditional Chinese music (Nos. 10 and 13). For example, both participants No.2 and No.7 reported that their children enjoyed listening to Chinese popular songs on their mobile phones, with No.7 noting that her son was more responsive to popular songs with a strong rhythm (R2). Furthermore, participant No.2 noticed that, in terms of Chinese music, her daughter preferred adults' popular songs to children's songs (R5).

In general, using the lens of the Ecological model (Bronfenbrenner, 1979, 1986), young children's musical exposure to the traditional Chinese children's songs mainly took place within the Microsystem that represents the family home, through live singing and media. In the family home, media played a supporting role in facilitating young children's experiences of Chinese children's songs. For the families who attended the Chinese music groups in the local area, this experience was extended to the Mesosystem as young children were immersed in the traditional Chinese children's songs through the family's participation in the community. Through these paths of musical exposure, the participant young children were reported to sing the whole of children's songs (Proactive 5, P5), humming the tunes independently (P4), or along with music (I4), and/or dancing along to music videos (R5).

8.4.3 Language exposure in the Chinese context

The Chinese identity of the families seemed to contribute to young children's language exposure to Mandarin, in addition to English. The participant families either spoke Mandarin among all family members, or between the mother and her children. Maternal language use is regarded to be influential in young children's singing development. For instance, Mang's (2006) study indicated that the Cantonese monolingual children performed consistently better than English bilingual children in both melodic singing accuracy and the use of a singing voice. Furthermore, Mang's study of the vocal function of Chinese-speaking children and English-speaking children revealed less distinction between the singing voice and the speaking voice among Chinese-speaking children, compared with English-speaking children (Mang, 2001). She suggested a conflation of a natural sense of linguistic pitch and musical pitch among Chinese-speaking children, as a result of the relationship between linguistic pitch and musical contours in traditional Chinese music, including the Chinese children's songs. In this study, the young children had a Mandarin language exposure in the family home, and most of them spoke Mandarin to their mother or both parents. Their bilingual

ability might play an influential role in their singing ability and in the characteristics of the singing voice.

The findings in the current study imply a strong connection between music and language, not least as part of children's socialisation into various cultural settings, both in the UK and also in China. The children's spontaneous singing and their language ability seemed to be mutually facilitated, especially where mothers were making explicit use of music with Chinese lyrics to promote broader language development. These languages included English, Mandarin, and other European languages, which were based on family origins. Research suggests that children's musical behaviour and development are likely to be shaped by their maternal language and/or language exposure. The influences in the aspects of sound perception and production appear to occur from the prenatal period. New-born infants are reported to perceive and prefer their maternal language (Moon, Cooper, & Fifer, 1993), and the melodic contours of their crying seem to be influenced by the native languages to which the infants were exposed (Mampe et al., 2009). Musical behaviours of young children are reported to be related to the acoustic aspects of their maternal languages. For example, according to Chen-Hafteck (1999) (as cited in Chen-Hafteck, 2007), young children from different cultures exhibited distinctive singing styles, depending on the characteristics of their maternal languages. Furthermore, based on her research on the relationship between tonal languages and children's singing, Chen-Hafteck (2007) concluded that the tonal characteristics of Chinese and African languages might give an advantage in singing accuracy to children speaking these languages over children speaking a non-tonal language. In general, it is recognised that language exposure plays a part in shaping children's musical development, and the musical ability of children might reflect the acoustic aspects of the languages that are familiar to the children.

8.4.4 Parental values regarding music learning in the Chinese context

The Chinese identity and value placed on education seemed to be reflected in the parental values regarding musical exposure and music learning by their young children. For instance, when it came to the perceived benefit of musical exposure, many participant mothers mentioned music's benefit to the brain development of young children (e.g. Lucy, Rina, No.13). Research suggests that music-making might promote brain plasticity across the lifespan (Wan & Schlaug, 2010). Chinese parents' regard for the potential benefit of music on brain development is likely to be related to the value placed on education and in the pursuit of outstanding academic achievement (Francis & Archer, 2005). In particular, participant No. 19 mentioned that music learning is required in order to gain higher marks so that her child could be qualified to enter a better UK school. This demonstrated the value

placed on education, which might also exist in many cultures, in addition to Chinese culture. In addition, music learning seemed to be related to establishing a good character, which is emphasised in Confucian philosophy. All of the case study families expected their children to learn a Western musical instrument, such as the piano or violin. For instance, when being asked about the potential benefit of learning an instrument, Hailey and Vicky associated instrumental learning with the establishment of discipline and patience. These findings are in accordance with the findings in Lum's (2016) study, in which the Chinese parents in Singapore valued their children's musical learning as nurturing their discipline, preserving Confucian ethos of becoming a good person, and creating a prosperous career in the future. In addition, Huang (2012) explored Chinese 'cultural fever' for Western classical music, and proposed that Western classical music finds transcultural affinities in the Confucian traditional values of artful self-cultivation and virtue, while simultaneously acting as a signifier of modernity and individual creativity. This notion might explain the musical expectation of the participant mothers for their children, as they seemed to adopt a Westernised lifestyle whilst holding a Chinese philosophy.

8.5 Evaluation of the SoI-EY framework

The newly-developed SoI-EY framework was applied in the present study as a tool to examine young children's musical development. The strengths and potential limitation of the SoI-EY framework are evaluated in the following sub-sections.

8.5.1 The strengths of the SoI-EY framework

The SoI-EY framework provides scope for gauging musical development of pre-school children, in which young children's musical behaviours and development are conceptualised into the range of four levels (Levels 2 to 5) and three domains (Reactive, Proactive and Interactive), and each matrix of level and domain is further explained by four elements (A, B, C and D). Presented as a concentric model (Figures 3.1 and 3.2), the SoI-EY framework served as a useful tool in mapping the musical behaviours and development of young children participating in this study. Based on the SoI-EY coding and mapping procedure developed for this study (see 4.5.3), a unique music-developmental pathway profile for individual children was able to be established. This is exemplified in the music-developmental pathway profiles of four case study children, summarised in Figure 8.1. These profiles visually presented the variety, predominance and patterns of young children's musical behaviours over time. Furthermore, the conceptualisation of musical development in three domains allowed different analytical perspectives. For example, in the present study,

musical development within each domain was analysed through calculating the frequency and average SoI-EY levels over 6 months. This was then complemented by the mothers' reports on their child's musical development, in which the examples of musical development across domains were revealed. Overall, the SoI-EY framework provided a useful way to examine patterns of young children's musical development and to generate music-developmental profiles for young children that may allow educators to gauge their musical development as a whole and to provide further support.

8.5.2 The limitation of the SoI-EY framework

Despite the strengths of the SoI-EY framework in mapping young children's musical development, several issues appeared throughout the data analyses process, which might have become potential limitations in this study. One major issue was whether the current SoI-EY levels had covered the full range of musical behaviours that could be observed in preschool children. For example, findings from this study demonstrated a 'ceiling effect' when examining musical development of young children in the Reactive domain. For two case study children, Lucy and Ellen, both aged 4, a constancy of Level 5 musical behaviours in the Reactive domain throughout the reported period was demonstrated (e.g. Figures 5.20a and 7.11a), showing little measurement of young children's musical progression over time. In particular, one of the case study children (Lucy) was engaged in performing narratives in music in a performing class, as well as creating drama while singing on her own, which seemed to match Level 6 Reactive musical behaviour, if compared to the original Sounds of Intent framework (Vogiatzoglou et al., 2011). Furthermore, four-year-old children participating in this study (e.g. Lucy) were observed to sing songs in tune with personal expressiveness, which seemed to match Level 6 Proactive musical behaviour in the original SoI framework. The potential insufficiency of the current SoI-EY framework raised the important role of context that needs to be considered when examining young children's musical development. The empirical evidence underpinning the current SoI-EY framework was based on the observations solely in an early years setting. However, the findings of this study raise the question whether young children may exhibit more advanced musical abilities in other contexts, such as in the family environment. A recent study on toddlers' singing ability revealed their pitch accuracy and wider pitch range to be more advanced than the evidence from available literature, and this result was attributed to the home-based recording samples (Gudmundsdottir & Trehub, 2018). Therefore, there is a need to expand the current SoI-EY framework, with a full investigation of young children's musical abilities in various contexts, including in the home environment.

Findings from this study also showed that, with repetitive listening, children showed recognition of musical pieces from a very young age, which represented their musical ability at Level 5 in the Reactive domain. For example, two of the case study children (Rina and Betty) responded to familiar music by facial expressions and/or vocalisations. Studies revealed that infants showed a familiarity with short melodic contours after frequent exposure (Chang & Trehub, 1977a) and an influence of Western Classical music culture on their listening preference for consonant intervals (Plantinga & Trehub, 2014), These studies showed infants' musical ability to process musical pieces at the perceptual level, although they are not yet able to synchronise their movements to the musical beats. Tafuri's (2008) classification of musical responses as 'perceptual' and 'productive' might be useful to address the issue (also see 8.2.2) – while children could process the musical pieces perceptually before the age of one, they are not able to 'produce' advanced musical responses, such as synchronised movement, until 4 or 5 years old. These fundamental differences should be taken into consideration when defining young children's musical development at each level.

Another issue raised in this study was the extent to which the SoI-EY framework could be applied when researching young children's musical development in a family context. In the present study, the SoI-EY ratings of individual children were generated from musical instances reported by the mothers in their diary accounts and interviews, and from the video recordings provided along with diary entries for data validation. Coding issues appeared when the diary account was not specific enough to determine the exact SoI-EY rating of the child. Furthermore, there were musical instances in which the mother under- or overestimated their child's musical behaviour, which was evident in the inconsistency of SoI-EY ratings between the diary account and video recording, which was the case in a few musical instances. The mothers might neglect the musical behaviour of their child that could have been rated at a higher level, or overestimated the musical ability of their child due to their confidence and pride in their child. Although the video recordings had provided observational evidence of musical behaviours, it was always difficult for the parents to capture the musical moments by filming on a regular basis. The uncertainty of the SoI-EY ratings in some cases and the difficulties of gaining video evidence of each reported musical instance became research limitation in this study. Therefore, it is suggested that, when the SoI-EY framework was applied in a family environment or other everyday context, a comprehensive booklet needs to be developed, in which a checklist may be included, in order for parents to look for musical behaviours that are more specifically defined by the SoI-EY framework.

8.6 Summary of the chapter

This chapter presented a discussion on aspects of young children's musical development and potential contextual factors, as well as how the findings might be related to current literature. Musical development across the four cases revealed age-related and, separately, context-dependent features, showing both the biological mutuality of young children's musical abilities and potential influences from their socio-cultural context. Musical development of young children was shaped and nurtured through multiple exposures to music in the home and local community, as well as indirectly by the musical biographies of parents. Young children's exposure to diverse musical genres were embedded in influences of English, Chinese, Western and family culture, and this was facilitated via various media, travelling and relatives. In terms of being part of the Chinese diaspora in London, the potential impacts on young children's musical experiences and development included: an exposure to Chinese children's songs with a linked purpose of language learning; exposure to Chinese language directly, and parental values on music learning, with an association of instrumental learning with building a good personal character. These contextual factors characterised the musical environment of these young children, and which were likely to play an influential role in shaping their musical development.

Chapter 9 Conclusion

9.1 Summary of the study

The present study investigated the nature of musical development of young children of the Chinese diaspora in London, and the extent to which their socio-cultural musical environment, set within a family context, might play an influential role in shaping their musical development. The study also aimed to focus on how the family as part of the Chinese diaspora in London might play a role in shaping young children's musical development.

In order to answer the research questions, the study applied two theoretical frameworks: firstly, the Sounds of Intent in the Early Years (SoI-EY) (Voyajolu & Ockelford, 2016) was applied as an assessment tool to examine the nature of young children's musical development. Based on the SoI-EY framework, musical behaviours of young children were conceptualised into three domains (Reactive, Proactive, Interactive) and four levels (Levels 2 to 5). Secondly, the Ecological Systems Theory framework (Bronfenbrenner; 1979, 2005) was applied as a theoretical lens to examine potential social and cultural factors within a family context that might be influential on young children's musical development. Drawing on current literature on young children's musical experiences in the family home, an adapted ecological model was developed in order to be applied in the present study.

In order to address the complexity and uniqueness of young children's musical development and their socio-cultural musical environment, case study was selected as the principal research approach in this study. The fieldwork included two stages of data collection: twenty participant mothers took part in the exploratory stage of data collection, which involved a semi-structured interview that investigated the musical biographies of the mothers, musical activities in their family context, and the mothers' expectations of their children's music learning in the future. Among twenty mothers, ten agreed to participate in the longitudinal stage of this study, in which they were required to keep a regular diary over a period of six months to report on the observed musical behaviours of their young children. The mothers were encouraged to provide supplementary documents such as video recordings and photographs. Two further interviews were undertaken with these ten participant mothers, in order to gain a deeper insight into their diary accounts and any video recordings that they had provided. Subsequently, three families were chosen for detailed case study analyses, embracing four individual children, two younger and two older for comparative purposes. Data analyses suggested that the musical development of these young children was age-related, as well as context-dependent. Their musical development

was shaped by the socio-cultural contexts, in which influences ranged from musical experiences with the family, in the local community, the musical biographies, biases, expectations and values of the parents, and the wider impacts of culture – English, Chinese, Western, and the family culture. Temporal patterns, such as the regularity of musical activities or visits to their home countries also seem to be influential. In terms of being part of the Chinese diaspora in London, the potential impacts on young children's musical experiences and development included: an exposure to Chinese children's songs with a linked purpose of language learning; exposure to Chinese language directly, and parental values on music learning, with an association of instrumental learning with the establishment of a good personal character. These contextual factors characterised the musical environment of these young children, and which were likely to play an influential role in shaping their musical development.

9.2. Addressing the research questions

The main aim of this study was to address and fulfil a research gap concerning our understanding of the musical development of young children who belonged to the Chinese diaspora in the UK. Despite the rapid growth of the Chinese population in the UK in recent decades, there is a lack of research evidence with respect to musical development of young children of the Chinese diaspora as an ethnic minority group in the UK. The research questions and the related findings of the present study are reviewed in the following sub-sections.

9.2.1 How do young children of the Chinese diaspora in London develop musically in their family context?

The findings of the current research suggest that the musical development of participant young children was both age-related, as well as being context-dependent. In general, the two 4-year-old children exhibited more advanced levels of musical behaviours in all of the three Sounds of Intent domains, particularly in the Reactive domain. A variance in observed levels reflected children's engagement in a diverse range of musical activities, from operating sound media (translated as equivalent to Level 2 in the SoI-EY framework) to learning a musical instrument (Level 5). For the young children around one year old, their musical behaviours generally remained at a comparatively lower level, although perceptually, they seemed to be capable of recognising and responding to musical pieces (characterised as Reactive Level 5). Young children's musical development from their mothers' perspective revealed a different bias according to age, with Reactive musical behaviours more

evidenced for the younger children, with more Proactive musical behaviours for the older ages. Contextual factors such as language access and proficiency were regarded as being related (and likely beneficial) to musical development.

9.2.2 What socio-cultural factors might play a role in shaping daily musical experiences of young children of Chinese diaspora in London?

Through the lens of the adapted ecological model, the young children's musical environment can be mapped into the constituent Micro-, Meso-, Exo-, Macro-, and Chronosystems. In the Microsystem, young children experienced music at home through interaction with adults and other children, and through a wide range of media, which enabled the young children to dance to, as well as sing along with music of different genres. Young children were immersed in music of various genres, including musical items that related to English, Chinese and individual family cultural preferences and parental biographies. Social interactions between family members, as well as with visitors, provided important opportunities to enrich and extend young children's musical exposure and support their musical development. Music was observed to be integrated into parenting practices in the participant families, being used, for example, for emotional regulation and in establishing daily routines. Parental values concerning the importance of music learning were reflected in the nature of the musical provision that they sought and provided for their children, both within and outside the home. In the Mesosystem, for example, the families in this study participated in their local diasporic community which provided the young children with more opportunities for extended musical engagement. These community-based experiences included visits to early years settings, dedicated specialist musical classes, other local facilities (church and shops), meeting members of the family's social network, and car journeys. In particular, there was the social phenomenon of the local Chinese music group, which was attended by several participants in this study. Other elements of the ecological system each provided related and linked experiences for the children, with detailed examples being evidenced for each of the case study children (see Chapters 5, 6, 7 and – in summary – Chapter 8).

9.2.3. How does the young children's family context, as part of the Chinese diaspora in London, play a role in shaping their daily musical experiences?

The role of families as part of Chinese diaspora in London was demonstrated in three aspects. Firstly, the participant families provided a mostly exclusive genre of Chinese children's songs for young children through a range of media, as well as live singing, usually

with the purpose of using music to foster Chinese language learning. Chinese children's songs were not only experienced in the family home, but there were also local Chinese music groups for young children that provided opportunities to learn Chinese children's songs within a group context, and for the families to use such contacts to deepen and develop their engagement in local Chinese social networks. Secondly, young children were exposed to the Chinese language, which has a different tonal structure from English. This rich auditory experience within and outside the home would be likely to enhance the development of the children's auditory perception abilities and be mutually reinforcing in their finer perception of the acoustic features of music (Bidelman, Hutka, & Moreno, 2013; Deutsch, Henthorn, & Dolson, 2004). Language exposure would likely be further enhanced if the family were to visit their home country. Thirdly, the parents were enthusiastic about sending their children to learn musical instruments for non-musical as well as musical reasons, such as promoting brain development, nurturing wide musical appreciation, and building up a good character. These familial benefits were underpinned by the retention of a Chinese identity within the family home.

9.3 Implication of the study

One important implication of this study is to raise awareness of the diverse socio-cultural musical environments of young children, particularly those with a diasporic background. The research findings in this study add to the existing evidence base concerning the distinctive nature of children's musical experiences and music development pathways before they enter formal education. The Chinese population has been growing rapidly in the UK, particularly in major urban centres such as London. For early years practitioners and local music providers, an enriched understanding of the nature of the musical experiences and development of infant and preschool children should provide a better basis for effective pedagogy and provision. The participant families' emphasis on linking musical and language exposure is also important for the design of wider curriculum and speech, language and communication provision for young children. For the families who are part of Chinese diaspora in London, the findings from this study provided an insightful understanding of how young children's musical behaviours and development might be examined through the SoI-EY framework, such that this could be used to raise awareness in families of how they might promote young children's musical development effectively through an increased awareness of what musical behaviours to look out for and what to encourage.

9.4 Limitation of the study

A limitation of this study might be the application of the research methods and the nature of the conduct of the research. Firstly, there were difficulties in reaching a wider range of participants in terms of their educational background and the socio-economic status, and most of the participant mothers recruited in this study held a Masters or PhD degree. The narrowness of the sample might generate a bias in the study, in which the findings might represent the circumstances of a small group of well-educated Chinese families in London, but not be representative of the wider Chinese diaspora in London. Secondly, most participant children in the current study were girls. For example, only one boy took part in the longitudinal stage in this study. The four case studies were all girls, implying that the research findings may have a gender bias. This is not to negate the significance of the findings, but to suggest that it would be important in any future study to include young boys in case there are important gender differences in the experiences of music which are hidden from the current dataset. It may be that the unintended participant gender bias might be due to a gender association concerning music as perceived by these Chinese parents. It may be that the parents show more interest in nurturing their children musically when they have daughters. Thus, in seeking participants for this study, it may be that parents with daughters were keener to take part. The gender bias may also have arisen from potential participants already noticing their daughters' early engagement with music and thus being more receptive to such an investigation and its longitudinal component. Also, the parents were required to keep a music diary for their children over a 6-month period and several found it a challenge to do this consistently, although the majority did provide multiple entries.

9.5 Recommendation for future research

Based on the findings and the possible limitations of this study, several related topics for future research are recommended:

Due to a gender bias in the participant nature of this study, it is recommended that any future study should recruit at least some young male participants, in order to gain a wider and possibly more balanced picture of young Chinese preschool children's musical behaviours and their development.

There is also an opportunity to extend the findings of this case study research to a wider population. Key detailed findings could be curated into a survey instrument that could be distributed to members of the Chinese diaspora in London and elsewhere, using available social networks and related media. Such a survey was outside the scope of the current

research, not least because of the rich dataset that emerged from the selected case studies. The current findings could also be extended to other ethnic groups within the UK to investigate the possible impact of linked ecological environments on their children's musical development.

Chinese music groups, as a form of local musical provision, seemed to be prevalent in several local areas in London. This is a distinct component of the ecology of community music provision and, as such, under-researched. Consequently, research into the functions of such Chinese music groups, the nature of musical activities being offered, and how the young children's attendance of the Chinese music group might be impacting other aspects of their musical and wider development, is also recommended.

Findings from this study also revealed a prevalence of parents encouraging and seeking instrumental learning for their children. Among the participant families, children as young as 3.5 years old had started piano lessons. The case study child Ellen began her cello lessons at the age of 4. As this mother commented that she did not know how to supervise her child's cello practices, more research into aspects of young children's instrumental learning within a family context would be useful for parents, as well as for instrumental teachers, not least because the available research literature on private practice (e.g. Pike, 2017) is also extremely limited.

In terms of the application of the SoI-EY framework, it would be useful to look at the developmental pathway of a specific musical activity, such as 'learning a musical instrument' or 'learning to sing a new song'. The findings in this study revealed that young children would exhibit behaviours across multiple domains of the same musical activities. For example, a child might learn a song by listening and dancing to it (Reactive), followed by 'imitative singing' (Interactive) and 'independent singing' (Proactive) and develop narratives in association with musical features (Reactive). With a focus on specific musical activities, further insights into young children's music developmental pathways might be provided.

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Appendix 1: The semi-structured interview script for the exploratory stage

Part One: Musical Biographies and identities of parents

1. What is your musical background? (experiences/ musical learning of any form)
2. What is your musical preference(s)?

Part Two: The Life Style of the Family

3. What is a typical weekday schedule of the family?
4. What do you do on weekend?
5. What language do you speak at home?

Part Three: Musical Environment and Engagement of Children

6. Do children have any musical activities at home? (In what contexts?)
7. Are there any media or resources related to music at home? (How to use them?)
8. Do children have any musical activities outside home? (In what contexts)

Part Four: Parents' Attitudes toward Children's Musical Engagement and Education

9. When children are growing up, what do you think is the most important for them?
10. How do you think of children's musical engagement as you mentioned above?
11. Would you arrange any musical activities (formally/informally) for children in the future? Why?

Appendix 2: The diary-keeping guideline provided for the participants in the longitudinal stage

Dear parents,

Thank you very much for your participation in the music diary project! Your time and effort is much appreciated. To get started, here is some useful information:

About Sounds of Intent Early Years framework: There are three types of musical behaviours that your child may be engaged in:

Reactive: responding to patterned sounds/music initiated by others or something else. (such as the responses when listening to recorded music, watching siblings making music, or hearing the singing of a parent.)

Proactive: initiative musical activities (such as making patterned sounds, making music, or singing)

Interactive: making music with another person.

Did you notice any musical engagement of your child matching the examples above?

About keeping a diary (weekly/fortnightly):

Things that you **might** want to note:

For the single musical activity:

· What did the child do? Please describe the musical activity. (such as moving to music, singing a song, making rhythmic sounds, using a CD player etc)

· Was this musical activity initiated by him/herself or someone/something else?

· Were there other people joining in or interacting with the child? If yes, how did they interact?

· Amount of time engaged with the music? (A few seconds? Several minutes?)

· Were music media being used? (such as TV, radio, computer, tablet, CD player)

· Was this musical activity linked to something else (such as being part of daily routine, happening repeatedly, learnt from nursery, being child's favourite)?

· Your comment on this or other things that you want to say about this activity.

For the weekly/fortnightly summary

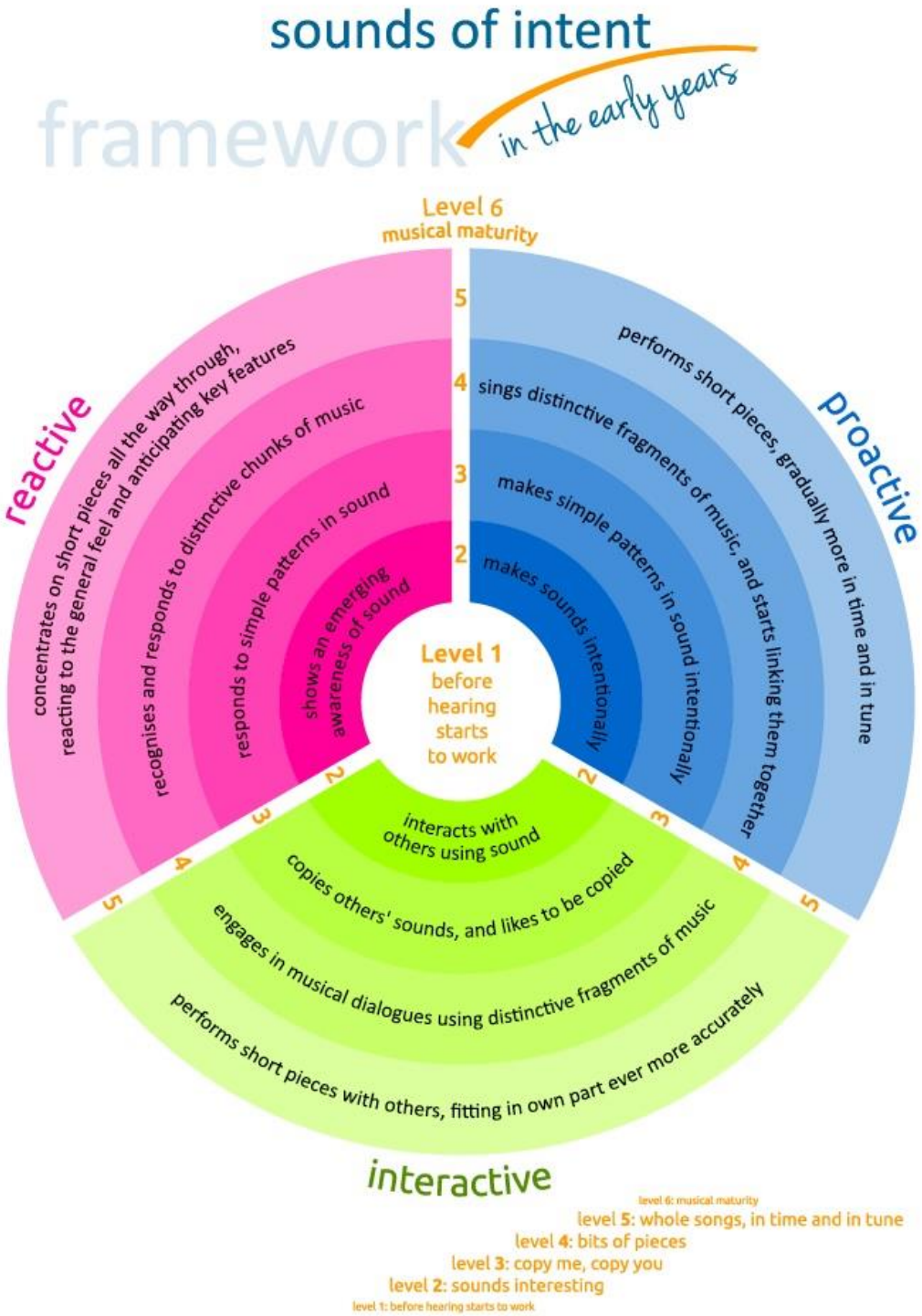
· How was the child engaged in music throughout the week(s)?

· Any recognisable patterns throughout the week (such as singing recognisable fragments of melody repeatedly on different days, asking for the same piece of music to listen to, practising , favourite activities)?

· Any other memorable moment that you would like to note down? (Please describe)

Above are some suggestions for you while you keep your own style and pace of writing. Have a good time with your child!

Yen-Ting


sounds of intent
framework
in the early years
Level 6
musical maturity
reactive
proactive
interactive
5
4
3
2
concentrates on short pieces all the way through, reacting to the general feel and anticipating key features
recognises and responds to distinctive chunks of music
responds to simple patterns in sound
shows an emerging awareness of sound
performs short pieces, gradually more in time and in tune
sings distinctive fragments of music, and starts linking them together
makes simple patterns in sound intentionally
makes sounds intentionally
Level 1
before hearing starts to work
interacts with others using sound
copies others' sounds, and likes to be copied
engages in musical dialogues using distinctive fragments of music
performs short pieces with others, fitting in own part ever more accurately
level 6: musical maturity
level 5: whole songs, in time and in tune
level 4: bits of pieces
level 3: copy me, copy you
level 2: sounds interesting
level 1: before hearing starts to work

親愛的家長:

感謝您參與本研究，也十分謝謝您願意花費寶貴的時間和體力來記錄孩子的音樂成長! 以下提供您一些有用的資訊:

有關 Sounds of Intent in the Early Years 音樂發展理論:

您的孩子可能會從事三種不同類型的音樂活動:

回應的: 對他人或其他東西所發出的音樂或聲響有所回應。例如: 聽音樂時的反應，看見兄弟姊妹在製造音樂 (make music) 的反應，或聽見父母哼唱的反應。

主動的: 自發性的音樂活動 。例如: 主動製造或發出有規律的聲響，主動製造音樂，或主動唱歌。

互動的: 和他人一同製造聲響或音樂，或一同唱歌。

您有發現您的孩子從事以上列舉的音樂活動嗎?

有關書寫音樂週記 (每周/每隔周):

以下是一些您**可能**想記下的事:

<u>單一音樂活動:</u>

- 孩子做了什麼? 請詳細描述音樂活動。例如: 隨著音樂擺動，唱歌，敲打固定的節奏，使用 CD 播放器等等。 孩子從事音樂活動的細節: 音樂活動是如何開始的? 孩子做了什麼事?
- 這個活動是孩子自己主動開始，還是其他的人事物所引發的?)
- 這個音樂活動有其他人一同參與或與孩子一起互動嗎? 若有，他們如何互動?
- 這個音樂活動持續多久? (幾秒鐘? 幾分鐘?)
- 有使用到音樂媒體嗎? (例如電視，廣播，電腦，平板電腦，CD 播放器等等)。
- 這個音樂活動可以連結到其他的事情嗎? (例如這是每天的例行活動，不斷重複，在幼兒園學會的，是孩子最喜歡的活動等等)
- 您自己對孩子進行此音樂活動的想法，或是任何想說的話

<u>以周/隔周 為單位的整體敘述:</u>

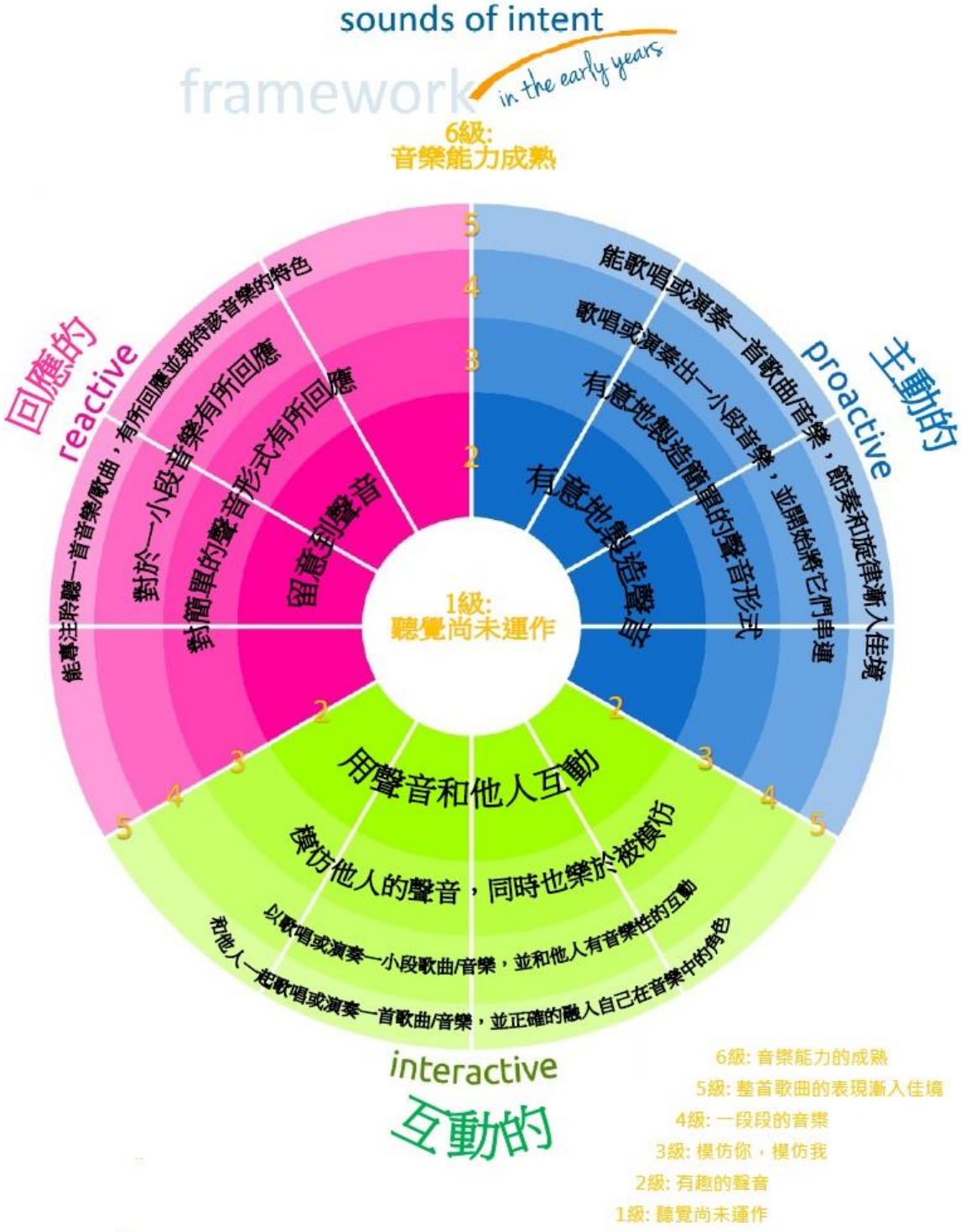
- 在本周中，孩子從事了哪些音樂活動? 是如何進行的?

- 有規律可循嗎? (例如在不同天唱同一首歌，不斷要求播放同一首音樂，做某件事情時一定伴隨著唱歌，本周最喜歡的音樂活動等等)

- 您的想法，以及其他您特別想記下的事情: (請描述)

在您按照自己的風格與步調進行音樂記錄時，希望以上的資訊能給您一些幫助。祝福您和孩子有個愉快的時光!

雁庭 敬上


sounds of intent
framework
in the early years
6級:
音樂能力成熟
回應的
reactive
主動的
proactive
互動的
interactive
1級:
聽覺尚未運作
留意到聲音
對簡單的聲音形式有所回應
對於一小段音樂有所回應
能專注聆聽一首音樂/歌曲，有所回應並期待該音樂的特色
有意地製造聲音
有意地製造簡單的聲音形式
歌唱或演奏出一小段音樂，並開始將它們串連
能歌唱或演奏一首歌曲/音樂，節奏和旋律漸入佳境
用聲音和他人互動
模仿他人的聲音，同時也樂於被模仿
以歌唱或演奏一小段歌曲/音樂，並和他人有音樂性的互動
和他人一起歌唱或演奏一首歌曲/音樂，並正確的融入自己在音樂中的角色
6級: 音樂能力的成熟
5級: 整首歌曲的表現漸入佳境
4級: 一段段的音樂
3級: 模仿你，模仿我
2級: 有趣的聲音
1級: 聽覺尚未運作

亲爱的家长:

感谢您参与本研究，也十分谢谢您愿意花费宝贵的时间和体力来记录孩子的音乐成长! 以下提供您一些有用的资讯:

有关 Sounds of Intent in the Early Years 音乐发展理论:

您的孩子可能会从事三种不同类型的音乐活动:

回应的: 对他人或其他东西所发出的音乐或声响有所回应。例如: 听音乐时的反应，看见兄弟姊妹在制造音乐 (make music) 的反应，或听见父母哼唱的反应。

主动的: 自发性的音乐活动 。例如: 主动制造或发出有规律的声响，主动制造音乐，或主动唱歌。

互动的: 和他人一同制造声响或音乐，或一同唱歌。

您有发现您的孩子从事以上列举的音乐活动吗?

有关书写音乐周记 (每周/每隔周):

以下是一些您可能想记下的事:

单一音乐活动:

- 孩子做了什麼? 请详细描述音乐活动。例如: 随着音乐摆动，唱歌，敲打固定的节奏，使用 CD 播放器等等。 孩子从事音乐活动的细节: 音乐活动是如何开始的? 孩子做了什麼事?

- 这个活动是孩子自己主动开始，还是其他的人事物所引发的?)

- 这个音乐活动有其他人一同参与或与孩子一起互动吗? 若有，他们如何互动?

- 这个音乐活动持续多久? (几秒钟? 几分钟?)

- 有使用到音乐媒体吗? (例如电视，广播，电脑，平板电脑，CD 播放器等等)。

- 这个音乐活动可以连结到其他的事情吗? (例如这是每天的例行活动，不断重复，在幼儿园学会的，是孩子最喜欢的活动等等)

- 您自己对孩子进行此音乐活动的想法，或是任何想说的话

以周/隔周 为单位的整体叙述:

- 在本周中，孩子从事了哪些音乐活动? 是如何进行的?

- 有规律可循吗? (例如在不同天唱同一首歌，不断要求播放同一首音乐，做某件事情时一定伴随着唱歌，本周最喜欢的音乐活动等等)

- 您的想法，以及其他您特别想记下的事情: (请描述)

在您按照自己的风格与步调进行音乐记录时，希望以上的资讯能给您一些帮助。祝福您和孩子有个愉快的时光!

雁庭 敬上

Appendix 3: Information sheet for the interview in the exploratory stage

Information Sheet for Participants in Research Studies

You will be given a copy of this information sheet

Title of project:	**An Investigation of the Socio-Cultural Musical Environment of British Chinese Young Children and their Musical Development**
Start and end dates:	October 2012 – September 2016
Name, address and contact details of the researcher:	Yen-Ting Wu Institute of Education, London 20 Bedford Way, London WC1H 0AL

I would like to invite you to participate in this research project. You should only participate if you want to. There will be no negative outcome if you choose not to participate. Before you decide whether or not you want to take part, it is important for you to read the following information carefully. I am pleased to answer any questions you have.

The purpose of this research is to improve our understanding of the nature of the socio-cultural musical environment for British-Chinese young children and how this might impact on their musical development. The results of this research are intended to improve the awareness, decisions and practices of early childhood practitioners and policy makers, as well as contribute to our knowledge in the fields of music education and the musical development of children.. The participants may gain new perspectives of parenting practice in general and in musical aspects of their children's behaviours and development as the benefit of participation.

The participants need to meet two requirements:

1. You are the parent of children under five years of age;
2. You and/or your spouse is/are of Chinese origin.

During your participation in this research, you will take part in a semi-structured interview. The topics of the interview include the background of the family, your child-

rearing attitudes and practices, both in general and in musical aspects, and you're your perceptions and recollections of your children's musical experiences. The interview will last for approximately 50 minutes and take place at your home or a place of your choice.

The interview will be audio-recorded. To minimise any possibility of distress or discomfort that you may experience during participation, you may request a halt of interviewing or/and recording at any time for any or no reason.

The data collected is treated as confidential and anonymous throughout the conduct and publication of the research. The storage and use of data will be in accordance with the Data Protection Act 1998. All data will be anonymised so that individuals cannot be identified in any subsequent reporting.

If you decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. During your participation, you have the right to withdraw from the research for any or no reason, and at any time.

Yen-Ting Wu
PhD Student
Institute of Education

Leading education and social research
Institute of Education University of London

研究說明

您將可保留一份此研究說明

研究名稱:	**英國地區華人幼兒之社會文化音樂環境本質與音樂發展**
研究起始時間:	2012 年 10 月 – 2016 年 9 月
研究者姓名與連繫方式:	吳雁庭 Institute of Education, London 20 Bedford Way, London WC1H 0AL

誠摯邀請您參與此研究。 您的參與屬自願性質，如不參與將不會對您造成任何負面影響。在您決定是否參與此研究之前，請詳細閱讀以下研究相關資訊。我將非常樂意回答您的問題。

本研究宗旨為探究英國地區華人幼兒的社會文化音樂環境本質，以及此環境對其音樂發展之影響。本研究結果希冀增進英國幼兒教育工作者和政府相關人員對此議題之關注，並有利於幼兒教育領域之決策與實務，同時也期許對於音樂教育和幼兒音樂發展的知識領域有所貢獻。對於研究對象而言，您的參與或許將使您對育兒與幼兒音樂發展有新的想法與理念。

研究對象將必須符合以下三個資格:

1. 您家中有五歲以下的孩子。
2. 您和/或 您的配偶為華人。
3. 您和家人居住在英國倫敦地區。

在您參與研究的過程，您將與我進行一次訪談。訪談的主題涵蓋家庭背景、您對育兒與音樂教育的想法與實際做法，以及您孩子所接觸的音樂經驗。本訪談時間長度約為 50 分鐘，地點為您的家中或是您選擇的地方。

本次訪談過程將錄音記錄。為避免您在參與的過程中感到不適，您可以在錄音的過程要求暫停，並且不需說明理由。

在本研究進行及發表的過程，所蒐集之所有資料將予以保密並匿名處理。資料的保存將遵守英國資料保護法 (Data Protection Act 1998) 之規定。所有的研究對象將不會被辨識出真實身分。

假如您決定要參與本研究，您將會收到此份研究說明，並需要簽署一份參與研究同意書。在參與本研究的過程中，您有權利在任何時間退出本研究，並不需提供理由。

吳雁庭
研究生
Institute of Education

研究说明

您将可保留一份此研究说明

研究名称:	**英国地区华人幼儿之社会文化音乐环境本质与音乐发展**
研究起始时间:	2012 年 10 月 – 2016 年 9 月
研究者姓名与连系方式:	吴雁庭 Institute of Education, London 20 Bedford Way, London WC1H 0AL

诚挚邀请您参与此研究。 您的参与属自愿性质，如不参与将不会对您造成任何负面影响。在您决定是否参与此研究之前，请详细阅读以下研究相关信息。我将非常乐意回答您的问题。

本研究宗旨为探究英国地区华人幼儿的社会文化音乐环境本质，以及此环境对其音乐发展之影响。本研究结果希冀增进英国幼儿教育工作者和政府相关人员对此议题之关注，并有利于幼儿教育领域之决策与实务，同时也期许对于音乐教育和幼儿音乐发展的知识领域有所贡献。对于研究对象而言，您的参与或许将使您对育儿与幼儿音乐发展有新的想法与理念。

研究对象将必须符合以下三个资格:

1. 您家中有五岁以下的孩子。
2. 您和/或 您的配偶为华人。
3. 您和家人居住在英国伦敦地区。

在您参与研究的过程，您将与我进行一次访谈。访谈的主题涵盖家庭背景、您对育儿与音乐教育的想法与实际做法，以及您孩子所接触的音乐经验。本访谈时间长度约为 50 分钟，地点为您的家中或是您选择的地方。

本次访谈过程将录音记录。为避免您在参与的过程中感到不适，您可以在录音的过程要求暂停，并且不需说明理由。

在本研究进行及发表的过程，所搜集之所有数据将予以保密并匿名处理。资料的保存将遵守英国数据保护法 (Data Protection Act 1998) 之规定。所有的研究对象将不会被辨识出真实身分。

假如您决定要参与本研究，您将会收到此份研究说明，并需要签署一份参与研究同意书。在参与本研究的过程中，您有权利在任何时间退出本研究，并不需提供理由。

吴雁庭
研究生
Institute of Education

Appendix 4: Informed consent form for the interview in the exploratory stage

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Institute of Education
University of London

Informed Consent Form for Participants in Research Studies

This form is to be completed independently by the participant after reading the Information Sheet and having listened to an explanation about the research.

Title of project:	**An Investigation of the Socio-Cultural Musical Environment of British Chinese Young Children and their Musical Development**
Start and end dates:	October 2012 – September 2016
Name, address and contact details of the researcher:	Yen-Ting Wu Institute of Education, London 20 Bedford Way, London WC1H 0AL

I have read the information sheet about the research. ☐ (please tick)

I have had the opportunity to ask questions and discuss the research and received satisfactory answers to all my questions. ☐ (please tick)

I agree to be interviewed. ☐ (please tick)

I agree to be audio-recorded during the interview. ☐ (please tick)

I understand that I am free to withdraw from the study without penalty if I so wish. I consent to the processing of my personal information for the purposes of this research only and that it will not be used for any other purpose. I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998.

Name _____ Signed _____ Date _____

Researcher's name _____ Signed _____ Date_____

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Institute of Education
University of London

參與研究同意書

在簽屬這份同意書之前，您將已經收到並閱讀研究說明，並聆聽研究者的口頭說明。

研究名稱:	**英國地區華人幼兒之社會文化音樂環境本質與音樂發展**
研究起始時間:	2012 年 10 月 – 2016 年 9 月
研究者姓名與連繫方式:	吳雁庭 Institute of Education, London 20 Bedford Way, London WC1H 0AL

我已經閱讀過本研究之研究說明。 ☐ (請打勾)

我已經有充分的機會與研究者討論，所有問題也都獲得解答。 ☐ (請打勾)

我同意參與訪談。 ☐ (請打勾)

我同意訪談時錄音記錄。 ☐ (請打勾)

我了解我有權利在任何時刻退出研究並且不會遭到責罰。我同意我所提供的資料將只作為本研究之用途，不會作其他用途。我了解所有資料將嚴格保密，並遵守英國資料保護法 (Data Protection Act 1998) 之規定。

姓名 _____ 簽名 _____ 日期 _____

研究者姓名 _____ 簽名 _____ 日期_____

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Institute of Education
University of London

参与研究同意书

在签属这份同意书之前，您将已经收到并阅读研究说明，并聆听研究者的口头说明

研究名称:	**英国地区华人幼儿之社会文化音乐环境本质与音乐发展**
研究起始时间:	2012 年 10 月 – 2016 年 9 月
研究者姓名与连系方式:	吴雁庭 Institute of Education, London 20 Bedford Way, London WC1H 0AL

我已经阅读过本研究之研究说明。 ☐ (请打勾)

我已经有充分的机会与研究者讨论，所有问题也都获得解答。 ☐ (请打勾)

我同意参与访谈。 ☐ (请打勾)

我同意访谈时录音记录。 ☐ (请打勾)

我了解我有权利在任何时刻退出研究并且不会遭到责罚。我同意我所提供的资料将只作为本研究之用途，不会作其他用途。我了解所有资料将严格保密，并遵守英国数据保护法 (Data Protection Act 1998) 之规定。

姓名 _____ 签名 _____ 日期 _____

研究者姓名 _____ 签名 _____ 日期_____

Appendix 5: Informed consent form for the participation in the longitudinal stage

Leading education and social research
Institute of Education
University of London

Informed Consent Form for Participants in Research Studies

This form is to be completed independently by the participant after reading the Information Sheet and having listened to an explanation about the research.

Title of project:	**An Investigation of the Socio-Cultural Musical Environment of British Chinese Young Children and their Musical Development – A Longitudinal Study**
Start and end dates:	October 2012 – September 2016
Name, address and contact details of the researcher:	Yen-Ting Wu Institute of Education, London 20 Bedford Way, London WC1H 0AL

I have read the information sheet about the research and had the opportunity to ask questions and discuss the research. ☐ (please tick)

I agree to take part in this longitudinal study. ☐ (please tick)

I agree to write and provide the weekly / fortnightly (please circle) diary that records musical activities of my child(ren). The diary is completed by either email contact with the researcher or writing on a form. ☐ (please tick)

I agree to provide visual images (photographs, videos) along with the diary when necessary. ☐ (please tick)

I agree to be interviewed and be audio-recorded during the interview. ☐ (please tick)

I understand that I am free to withdraw from the study without penalty if I so wish. I consent to the processing of my personal information for the purposes of this research only and that it will not be used for any other purpose. I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998.

Name _____ Signed _____ Date _____

Researcher's name _____ Signed _____ Date_____

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參與研究同意書

在簽屬這份同意書之前，您將已經收到並閱讀研究說明，並聆聽研究者的口頭說明

研究名稱:	**英國地區華人幼兒之社會文化音樂環境本質與音樂發展－長期研究**
研究起始時間:	2012 年 10 月 – 2016 年 9 月
研究者姓名與連繫方式:	吳雁庭 Institute of Education, London 20 Bedford Way, London WC1H 0AL

我已經閱讀過本研究之研究說明，並有充分的機會研究者討論，所有問題也都獲得解答。 ☐ (請打勾)

我同意參與此長期研究。 ☐ (請打勾)

我同意每周/每隔周 (請圈選) 提供日誌，日誌中記錄本人孩子的音樂活動。日誌完成後將以電子郵件方式或書寫表格方式寄給研究者。 ☐ (請打勾)

我同意在必要時隨同日誌提供孩童的影像資料，例如影片或照片。 ☐ (請打勾)

我同意參與訪談，並於訪談時錄音紀錄。 ☐ (請打勾)

我了解我有權利在任何時刻退出研究並且不會遭到責罰。我同意我所提供的資料將只作為本研究之用途，不會作其他用途。我了解所有資料將嚴格保密，並遵守英國資料保護法 (Data Protection Act 1998) 之規定。

姓名 _____ 簽名 _____ 日期 _____

研究者姓名 _____ 簽名 _____ 日期_____

参与研究同意书

在签属这份同意书之前，您将已经收到并阅读研究说明，并聆听研究者的口头说明

研究名称:	**英国地区华人幼儿之社会文化音乐环境本质与音乐发展 – 长期研究**
研究起始时间:	2012 年 10 月 – 2016 年 9 月
研究者姓名与连系方式:	吴雁庭 Institute of Education, London 20 Bedford Way, London WC1H 0AL

我已经阅读过本研究之研究说明，并有充分的机会研究者讨论，所有问题也都获得解答。 ☐ (请打勾)

我同意参与此长期研究。 ☐ (请打勾)

我同意每周/每隔周 (请圈选) 提供日志，日志中记录本人孩子的音乐活动。日志完成后将以电子邮件方式或书写表格方式寄给研究者。 ☐ (请打勾)

我同意在必要时随同日志提供孩童的影像数据，例如影片或照片。 ☐ (请打勾)

我同意参与访谈，并于访谈时录音纪录。 ☐ (请打勾)

我了解我有权利在任何时刻退出研究并且不会遭到责罚。我同意我所提供的资料将只作为本研究之用途，不会作其他用途。我了解所有资料将严格保密，并遵守英国数据保护法 (Data Protection Act 1998) 之规定。

姓名 _____ 签名 _____ 日期 _____

研究者姓名 _____ 签名 _____ 日期_____

Appendix 6: Details of Lucy's SoI-EY ratings over 37 weeks

Week	Data Source	Age (Month)	Instance	Reactive Level	Reactive Element	Proactive Level	Proactive Element	Interactive Level	Interactive Element
0	Interview [1]	51	1					4	B
		51	2	5	D				
		51	3	5	D				
		51	4	5	B	2	A	3	D
		51		3	B				
		51	5	5	A				
		51	6			3	D		
		51	7					4	B
		51	8	5	B			5	A
5	Diary [1]	52	9			2	A		
		52	10	5	B				
6	Diary [2]	52	11					5	A
		52	12			4	A		
		52	13			5	C		
		52				3	D		
7	Diary [3]	52	14			5	B		
		52	15					4	B
		52	16	5	A				
8	Diary [4]	53	17	5	B,D	2	A	4	B
		53	18	5	B	2	A		
9	Diary [5]	53	19			5	B		
		53				3	D		
10	Diary [6]	53	20			2	A	5	A
		53	21	3	B	5	A		
11	Diary [7]	53	22	5	B	5	A		
12	Diary [8]	53	23					5	A
		53	24	5	C				
		53	25					5	A
13	Diary [9]	54	26					3	B
		54						4	A,B
		54	27					3	B
14	Diary [10]	54	28					3	B
		54						4	A,B
		54	29					4	B
		54	30	3	D				
		54		5	C,D				
		54	31			5	B		
15	Diary [11]	54	32					5	A
		54	33					5	B
16	Diary [12]	54	34	5	A				
		54	35			4	A		

17	Diary [13]	54	36			5	A		
		54	37	5	D			5	C
18	Diary [14]	55	38			5	C		
		55	39			5	C		
19	Interview [2]	55	40					4	B
		55	41	5	B			5	A,C
		55	42					3	D
20	Diary [15]	55	43			4	A		
		55	44	5	B,D			4	C
21	Diary [16]	55	45	5	B,D				
22	Diary [17]	56	46					4	B
		56	47			4	A		
23	Diary [18]	56	48					5	A
		56	49			5	B		
		56	50	5	B,D	5	A		
24	Diary [19]	56	51					5	B
		56	52			5	B		
25	Diary [20]	56	53	5	D				
		56	54	5	B,C,D				
		56	55			5	C		
26	Diary [21]	57	56	5	D	5	A		
		57	57	5	D			5	A
28	Diary [22]	57	58					3	C,D
29	Diary [23]	57	59	5	D	5	B		
33	Diary [24]	58	60	5	B,D	5	A		
		58	61					4	B
		58	62					5	A
		58	63	5	B,C,D				
		58	64	5	B,D				
		58	65	5	B,D			5	A
		58	66			5	A		
37	Interview [3]	59	67			5	D		
		59	68					4	B
		59	69	5	B			3	D
		59	70			5	A		
		59	71			5	A		

Appendix 7: Details of Rina's SoI-EY ratings over 32 weeks

Week	Data source	Age (month)	Instance	Reactive Level	Reactive Element	Proactive Level	Proactive Element	Interactive Level	Interactive Element
0	Interview [1]	10	1	2	B				
		10	2	2	A				
		10	3	2	A				
		10	4	2	A				
		10	5			3	A		
		10	6	3	B				
		10	7	4	A				
		10	8			3	D		
		10	9	3	D				
		10	10					2	A
3	Diary [1]	10	11	2	A				
				3	B				
		10	12	3	B				
		10	13	2	A				
		10	14	2	A				
		10	15	2	B				
5	Diary [2]	11	16					2	A
		11	17	5	A			2	A
		11	18	2	A				
		11	19	5	A				
		11	20	2	C				
7	Diary [3]	11	21	2	B				
		11	22			2	D		
		11	23	3	C	3	C	3	C
9	Diary [4]	12	24	2	A			2	A
		12	25			2	A	3	B
11	Diary [5]	12	26					2	A
		12	27					3	B
		12	28					3	B
13	Diary [6]	13	29	2	A				
		13	30	4	A				
		13	31	5	A				
		13	32	5	A				
		13	33			4	A		
16	Diary [7]	13	34	2	A			3	B
		13	35	2	A			2	A
		13	36			2	A		
		13	37	2	A			2	A
	Interview [2]	13	38	2	B				
		13	39	2	A				

		13	40	2	B				
		13	41	2	A				
		13	42			2	A		
		13	43	2	A				
		13	44			2	A		
						3	A	2	A,B
18	Diary [8]	14	45	2	A				
		14	46			2	A		
		14	47			4	A		
		14	48	4	D				
		14	49			2	A	2	B
21	Diary [9]	14	50			3	A		
23	Diary [10]	15	51			3	C		
		15	52	2	A	3	D	2	B
26	Diary [11]	16	53	2	B			2	A
32	Diary [12]	17	54			2	A		
		17	55	2	A				
		17	56	2	B	2	A		
		17		3	B				
		17	57	4	A				
		17	58			3	D	2	B
	Interview [3]	17	59	2	A				
		17	60	3	B				
		17	61	3	B				
		17	62					2	A

Appendix 8: Details of Ellen's SoI-EY ratings over 29 weeks

Week	Data source	Age (month)	Instance	Reactive Level	Reactive Element	Proactive Level	Proactive Element	Interacitve Level	Interactive Element
0	Interview [1]	51	1			3	A		
		51	2	5	A,D				
		51	3			5	A		
		51	4					5	A
		51	5			5	A		
		51	6					5	A
2	Diary [1]	51	7			4	A		
		51	8			5	B		
		51	9			3	A		
		51	10			5	A		
		51	11					5	A
		51	12			3	A		
		51	13			3	A		
		51	14					5	A
		51	15					5	A
		51	16			3	A		
		51	17					5	A
		51	18			3	A		
3	Diary [2]	51	19	5	A,D				
		51	20					5	A
5	Diary [3]	52	21	5	C				
		52	22			4	A		
		52	23			3	D		
7	Diary [4]	52	24			4	C		
		52	25	5	A				
8	Diary [5]	52	26			4	C		
		52	27			5	A		
		52	28			5	C		
		52	29	3	B				
11	Diary [6]	53	30	5	A				
		53	31			5	D		
17	Interview [2]	54	32	5	A			4	B
		54	33			5	D		
		54	34	5	A			4	B
		54	35	5	B			5	B
		54	36	5	D			5	A
		54	37	5	D			4	C
		54	38			5	B		
19	Diary [7]	55	39			5	D	5	A
21	Diary [8]	55	40			5	D	5	A

		55	41			4	A		
		55	42	5	D	5	A		
25	Diary [9]	56	43			5	D		
		56	44			5	B,C		
29	Interview [3]	57	45					5	B
		57	46			5	D	3	B
		57	47	5	A	2	A		
		57	48	5	A				
		57	49			5	C	3	B
		57	50			5	D		
		57	51	5	B,D				

Appendix 9: Details of Betty's SoI-EY ratings over 29 weeks

Week	Data source	Age (month)	Instance	Reactive Level	Reactive Element	Proactive Level	Proactive Element	Interactive Level	Interactive Element
0	Inteveiw [1]	10	1	2	A				
2	Diary [1]	10	2	2	A				
		10	3	4	A			2	A
		10	4	2	A				
		10	5	4	A			2	A
		10	6	2	A				
		10	7	2	A				
3	Diary [2]	10	8	2	A				
5	Diary [3]	11	9	2	A				
		11	10					3	B
		11	11			2	A		
		11	12	5	A				
7	Diary [4]	11	13	5	A			2	A
		11	14	5	A				
8	Diary [5]	12	15					3	D
		12	16	3	B				
		12	17	3	B				
11	Diary [6]	12	18	5	A			2	A
		12	19	5	A				
17	Interview [2]	14	20	2	A	2	A		
		14	21	5	A				
		14	22	5	A			2	A
		14	23			3	A,D		
		14	24	2	A				
		14	25			2	A		
19	Diary [7]	14	26	2	A				
21	Diary [8]	15	27	2	A				
		15	28					2	A
		15	29	2	A				
		15	30	3	D				
25	Diary [9]	15	31	2	B			2	A
		15	32			2	A		
29	Interview [3]	17	33					2	A
		17	34	5	A,B	2	A		
		17	35					3	B
		17	36	2	A				
		17	37	3	D				
		17	38	5	A				
		17	39	5	A				
		17	40			2	A		